



This manual has been scanned by the
Vickers MG Collection & Research Association

www.vickersmg.org.uk

Please support the work of the Association.

Click on the image to donate through PayPal:



Or regularly support us through Patreon:



**SMALL ARMS
TRAINING**

VOL. V.

1931

MILITARY BOOKS

Published by



Authority.

LONDON:

PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE

To be purchased directly from H.M. STATIONERY OFFICE at the following addresses:
 Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh;
 York Street, Manchester; 7, St. Andrew's Crescent, Cardiff;
 15, Donegall Square West, Belfast;
 or through any Bookseller.

(Unless otherwise stated books in the following list are obtainable by Officers, Non-Commissioned Officers and Men (in the manner prescribed by paragraph 649 of the Regulations for the Allowances of the Army 1924), at a discount of 25% off the prices quoted, postage being an additional charge (odd farthings should be counted as halfpennies). Applications should be made on Army Form L. 1372, and addressed to the Under-Secretary of State, The War Office, S.W.1.)

Abbreviations and Instructions for Drafting of Orders. Instructions, Reports and Messages. 1927. Provisional. 2d. Amendment No. 2. March 1928. 1d.

Accounts. Army. See FINANCIAL INSTRUCTIONS.

Africa. Notes on the Geology of the Continent of. 3s.

Air Survey Committee. Report No. 1. 1923. 4s. 6d. Additional Bibliography. No. 1. 2d.; No. 2. 1927. 6d.; No. 3. Simple Methods of Surveying from Air Photographs. (Out of print); No. 4. Stereoscopic Examination of Air Photographs. 3s. 6d.; No. 5. Calibration of Surveying Cameras. 2s. 6d.; No. 6. Extensions of the "Arundel" Method. 4s. Amendment No. 1. 1d.; No. 7. The Fourcade Stereogoniometer. 3s.

MILITARY BOOKS, published by Authority—continued.

- Aldershot Command. Standing Orders for.** 1930. Amendment No. 1. 1d.
- Allowances. Army. Regulations.** 1930. 2s. 6d. Amendments Nos. 1-15. 1d. each.
 See also FIELD ALLOWANCE, OUTFIT, PAY OF OFFICERS, and SEPARATION ALLOWANCE.
- Amharic Language. Short Manual of the.** With Vocabulary. 1910. 5s.
- Animal Management.** 1923. Prepared in the Veterinary Department of the War Office. (Cloth.) 2s.
- Anti-Aircraft Artillery.** Instructions for Practice. 1928. 6d. Amendments Nos. 1 and 2. 1d. each.
- Anti-Aircraft Defence (Army Units).** Manual, Vol. II. War. Dec. 1929. 3d.
- Armoured Cars.** Maintenance Handbook. Tracked and Half-Tracked Vehicles. 1927. 6d.
 See also TANK AND ARMoured CAR.
- Armourers.** Instructions for:—
 Care, repair, browning, etc., of small arms, Machine Guns, "Parapet" Carriages, and for the care of Bicycles. 1912. (Reprinted, with Amendments, 1916.) 2s. 6d.
 Addendum, Jan. 1918. Care and repair of Rifles, Magazine, -303-inch Pattern, 1914. 1d.
 Do. Aug. 1921. 1d.
- Army Entrance Regulations.** See ENTRANCE.
- Army List. Monthly.** Officers on the Active List. (Publication was suspended during the War) 1—
 Jan. 1919 and after. Each 5s.
 Quarterly Supplement. Dec. 1921 to June 1922. Each 4s.
 Half-Yearly Supplement. Dec. 1922. 6s.
 Do. June 1924 and after. Each 5s.
- Army List.** Half-Yearly. (Not issued in Oct. 1914.) Each 15s.
 Do. Supplement. Each 7s. 6d.
- Army Orders.** Monthly. Each 3d.
 Do. Index for 1929. 6d.
 Do. Covers for. 9d.
- Army Service Corps.** See SERVICE.
- Artificers. Military. Handbook.** 10th Edition. 1915. 9d.
- Artillery at the Picardy Manœuvres in 1910.** Translated from the French, 2s. 6d.
- Artillery, Field Army Instructions, 1931.** 9d. Amendments No. 1. 1d.

Artillery, Royal :—

Instructions for Practice Seawards, 1931. 9d.

Coast, Training. Vol. I. 1929. Supplement. Jan. 1929. 2d. Amendment No. 1. 2d. Vol. II. 1920. Amendment No. 2. Jan. 1929. 1d.

Light, Medium and Heavy. Instructions for Practice. 1927. 3d.

Rangefinders. See *that item*.

Seniority Lists :—

Artificers. R.A. April 1930. 2d.
 Artillery Clerks, Second Division. April 1930. 1d.
 Battery Quartermaster-Serjeants and Serjeants. April 1930. 4d.
 Farriers. April 1930. 2d.
 Assistant Instructors in Gunnery. April 1930. 2d.
 Master Gunners. 3rd Class. April 1930. 1d.
 Saddlers. April 1930. 1d.
 Warrant Officers. Class II. April 1930. 1d.

Training :—

Vol. I. Drill, 1924. 1s. Amendments Nos. 2 to 7. 1d. each. Vol. II. 1923. Gunnery. 1s. 6d. Amendments, May 1924. 1d.; Dec. 1924. 1d.; July 1925. 1d.; No. 1. 1926. 1d. Vol. III. 1921. Organisation and Employment of Artillery in War. 1s. 6d.
 Vol. II. Gunnery. 1928. 1s. 6d. Amendments Nos. 1, 2 and 3. 1d. each.
 Vol. III. War. 1928. 9d. Amendment No. 1. 1d.

Artillery, Royal Horse :—

Seniority Lists :—

Battery Quartermaster-Serjeants and Serjeants. April 1930. 1d.
 Warrant Officers. Class II. April 1930. 1d.

Artillery College. Reports upon the 14th to 18th Senior Classes. 1s.

Do. 19th. 1s. 6d.
 Do. 20th and 21st. Each 2s.
 Do. Advanced Classes, Reports on. (See also *Ordnance College*) :—
 36th. 1s. 6d.
 37th. 2s.
 38th. 1s. 6d.

Artillery Instruments :—

Handbook of. 1914. 1s. 6d.
 Do. Amendments. 1d.
 Do. Addendum to. 2d.
 Do. Appendix. Dec. 1915 (Periscopes, etc.); and Amendments to p. 111 of the Handbook. *With Plates*. 1d.

Artillery Museum in the Rotunda, Woolwich. Official Catalogue. 1906. (Sold at the Rotunda.) 1s. 6d.

Artillery and Rifle Ranges Act, 1885, and Military Lands Act, 1892.

Byelaws :—

Aldeburgh, 1896; Ash, Aldershot Camp, 1887; Finborough, 1901; Hythe, 1894; Inchkeith Battery, 1896; Kinghornness, 1896; Landguard, 1887; Lydd-Dungeness, 1895; Middlewick, 1890; Millbrook, 1888; Orchard Portman, 1896; Scarborough, 1902; Scraps Gate, 1886; Shoburyness, 1895; Southwold, 1896; Strensall, 1900; Wash, 1891; Whitehaven Battery, Cumberland, 1896. 1d. each.
 Purfleet, 1911. 1s. Salisbury Plain, 1900. 4d.

Artillery Survey. Manual. Parts I and II. 1924. (Sold together). 3s. Amendment No. 1. Jan. 1928. 1d.

Artillery Survey. Manual. Part I. 1927. 9d. Amendment No. 1. 1d.
 Do. Do. Part II. (Reprint 1930 with Amendment No. 1). 2s.

Austria. Campaign of 1866 Against. See *GERMANY*.

Ballistics. Handbook of. (Translated from the 2nd German edition) :—
 Vol. I. Exterior Ballistics. 30s.

Barracks. Instruction in Care of. 1930. 1s. 3d. Amendment No. 1. 1d.

Bashforth Chronograph. Experiments with, to determine the resistance of the air to the motion of projectiles. Report on. 1870. 1s.

Battle Honours awarded for the Great War. Complete List. 6d.

Bermuda Militia Artillery. Regulations. 1914. 9d.

Bicycles (Pedal). Military. Handbook on. 1922. (Reprinted 1930.) 1d.

Bounty to Soldiers. See *FIELD ALLOWANCE*.

British Minor Expeditions, 1746 to 1814. 1884. 2s. 6d.

Cadet List. } See *TERRITORIAL FORCE*.
Cadet Units. }

Casualty List, War Office and Air Ministry Weekly, commencing Aug. 7, 1917 to March 4, 1919. Each 3d.

Cavalry. Technical Operations; Cavalry in an Army; Cavalry in Battle. Translated from the French of Captain Loir, XX Army Corps Staff. With a Preface by General Langlois. *With Maps*. 3s. 6d.

Cavalry of the Line. Peace Organisation of the: and Arrangements for Mobilization consequent on the Establishment of Cavalry Depôts. (Special A.O. July 19, 1909.) 1d.

Cavalry Training. 1924. Vol. I. 1s. 6d. Amendment No. 1. Jan. 1925. 1d.; No. 3. Jan. 1926. 1d.; No. 4. Dec. 1926. 1d.
 Do. Vol. II. (War, March 1929). 9d. Amendment No. 1. 1d.

See also *ITALIAN CAVALRY*.

Chemical Warfare. Manual of the Medical Aspects of. 1926. 9d.

Chirophy. Manual of. 1931. 1s.

Civil Employment for Regular Sailors, Soldiers and Airmen. Guide, 1927. 3d. Amendment No. 1. March 1928. 1d.; No. 2. Feb. 1929. 1d.

Clothing and Necessaries (including Materials). Priced Vocabulary of February 1929. 1s. Amendments Nos. 1 and 2. 1d. each.

Clothing Regulations :—

Part I. Regular Forces. 1926. 1s. Amendments Nos. 1 to 8. 1d. each. No. 7. 2d.

Part II. Special Reserve. 1914. 3d.

Combatant Commissions as Second-Lieutenants. Regulations under which they may be granted to Non-Commissioned Officers of the Regular Army. Nov. 1922. 1d.

Commands, Military, and Staff in the United Kingdom. Re-organisation of. (Special Army Order, Jan. 6, 1905, with alterations to date. Issued with Special Army Order, Nov. 11, 1907.) 3d.

Commission in H.M. Land Forces, General Guide to. 1s.

Company Training. Notes on. For the use of the Special Reserve, Territorial Force, and newly-raised Units of the Regular Army. Sept. 1914. 1d.

Cooking and Dietary. Manual of Military. 1924. 6d. Amendment No. 1. 1d.

Co-ordination of Voluntary Effort resulting from the formation of the D.G.V.O. Department.

A National Scheme of :—

Appendices III and IV. (A Detailed Report of the Work of the Recognized Associations, 1920.) 5s.

(The Report of the Director-General, with Appendices I and II, was published as [Cmd. 173] of Session, 1919.) Price 2d.

Amendments. Sept. 1929. 1d.

Courses of Instruction. 1926. 4d. Amendments, Aug. 1928. 3d.

Programme of Courses to be held during the period April 1, 1927 to March 31, 1928. 3d. April 1, 1928 to March 31, 1929. 3d.; April 1, 1929 to March, 1930. 4d.; Amendments Nos. 1 to 9. 1d. each. April 1, 1930 to March 31, 1931. 4d. Amendment No. 1. 1d.

Crew Drill for Medium Tanks (Marks I, II and II*) 1930. 2d.

Crew Drill for Rolls-Royce Armoured Cars, 1930. 1d.

Cyclist Training. 1917. Provisional. 6d. Amendments, Aug. 1918. 1d.

Demobilization. Army. Regulations :—

Part I. With Diagram showing Method of Dispersal; and Map of Dispersal Stations and Areas in the United Kingdom. 1s. 6d.

Part II. With Plan of Hutment Lines showing suggested Appropriation of Buildings for use as a Dispersal Station: and Map of Dispersal Stations and Areas in the United Kingdom. 6d.

Part III.

Do. Chap. XXIV. Labour Units. 2d.

Do. Chap. XXV. Part I. Dispersal of Officers of the Army Chaplain's Department. 1d.

Do. Chap. XXV. Part II. Ordnance Services. 2d.

Do. Chap. XXVI. O.M.A.A.C. 2d.

Do. Chap. XXVII. Animals. 3d.

Do. Chap. XXXII. The Volunteer Force. 2d.

Do. Chap. XXXIII. British West Indies Contingents. 2d.

Addenda to Chap V. Special Registration. 1d.

Amendments :—

Nos. 3 to 25. Each 1d.

To Parts I. and II. 1d.

Dental Corps, Army. Regulations for Admission, 1930. 3d. Amendment No. 1. Dec. 1928. 1d.; No. 2. July 1929. 1d.

Do.

Standing Orders. See under MEDICAL CORPS.

Disabled and Discharged Soldiers in France. Training and Treatment of. Report by Sir Henry Norman, Bart., M.P., Liaison Officer of the Ministry of Munitions to the French Ministry of Inventions. 4d.

Diseases, Medical, in the Tropical and Sub-Tropical War Areas. Memoranda on. 1919. (Fourth Edition.) 1924. 2s. 6d.

Draining Manual. For the use of Royal Engineer Officers, and other persons, employed on the Construction and Maintenance of Drainage Works in connection with War Department Buildings in the United Kingdom or in similar Climates. (1921.) 5s.

Drawing Plates. Military :—

Attack of Dufor's Countermines or 2nd Plate of Mines; Carnot's First System; Detached Forts; Concealed Defences, 1, 2, 3, 4; Printing Plate, A, B, C, &c.; Detail Plate, No. 1; Do., No. 2; Neighbourhood of Woolwich. Village and Surrounding Ground. 2d. each.

Attack of Fortress—Preliminary Operations; Do., Distant Attack; Do., Close Attack, Neighbourhood of Metz. 3d. each.

Neighbourhood of Woolwich, Southern Side. 1s. 6d.

Woods and Villages. 6 Plates. 6d. each.

Dress Regulations for the Army. 1911. Amendments Nos. 3 to 6. 1d. each.

Dress Regulations for the Army (Provisional). 1923. 3d. Amendment No. 1. 1d.

Drill Book, R.A.S.C. (issued with A.O. for Oct. 1920). 3d.

Dynamics. Notes on. 2nd Edition. 1908. 3s.

Education. Imperial Conference. Convened June 11 and 12, 1919, by the Chief of the Imperial General Staff. 6d.

Educational Training. (Provisional). 1923. 3d. Amendments Nos. 1 to 10. 1d. each.

Egypt. British Force in. Standing Orders or the. 1912. 1s.

Egypt. Campaign of 1882 in. Military History of the. With case of Maps. Condensed Edition. 1908. 3s. 6d.

Electrical Communications. Fixed. Instructions as to. 1912. (Reprinted, with Amendments, 1916.) 4d.

Electricity. Notes on, and Service Electrical Apparatus as applied to Artillery. Nov. 1926. 2s.

Electric Light and Power Work of the German Army. Notes on. 1920. 1s. 6d.

Electric Light Apparatus. Defence. Instructions for the Working of. 1915. 1d.

Emoluments of Retired and other Officers, Nurses and Pensioners, employed in a National Emergency. Royal Warrant, dated Oct. 25, 1927. 1d.

Encounter. The Battle of. By Hans von Kiesling. Part I. Practical. Translated. 1s. 6d.

Energy Expenditure of the Infantry Recruit in Training. 3s.

Engineer Services. Lecture given to the Army Class. London School of Economics. Lent Term. 1925. 4d.

Engineer Services. Regulations. Peace:—

Part I. 1924. 1s. Amendments. No. 1. Nov. 1927. 1d. No. 2. April 1928. 1d.; No. 3. Nov. 1928. 1d.; No. 4. Feb. 1929. 1d.; No. 5. May 1929. 1d.; No. 6. June 1929. 1d.; No. 7. Aug. 1929. 1d.

Part II. 1928. Technical Treatises. 4d. Amendment No. 1. 1d.

Parts I and II. Amendments. Jan. 1924. 1d.

Part II. Amendments, 1930, 1 and 2. 1d. each.

Engineer Training. 1922. (Provisional.) 9d.

Vol. II. 1926. 9d. Amendments Nos. 2, 3 and 4. 1d. each.

Engineering, Military:—

Vol. II. Defences, 1925. 1s. 6d.

Vol. III. Bridging, 1928. 2s. 6d. Amendment No. 1. 2d. No. 2. 1d.

Vol. IV. Demolitions and Mining. May 1923. 2s. 6d. Amendment. No. 1. Oct. 1928. 1d.

Vol. V. Roads. 1922. 2s.

Vol. VI. Water Supply. 1922. 5s. Amendments, Feb. 1925. 1d.

Vol. VII. Accommodation. 1927. 1s. 6d. Amendment No. 1. 1d.

Vol. VIII. Railways. March 1929. 2s. 6d. Amendment. No. 1. July 1929. 1d.; No. 2. Aug. 1929. 1d.; No. 3. Sept. 1929. 1d.

Technical Training:—

Vol. I. Mechanical Engineering. 1925. 3s. 6d.

Vol. II. Electrical Engineering. 1924. 3s. 6d. Amendments. Jan. 1926. 2d.

Engineering, School of Military:—

Notes on Heat and Steam Engines. 1s. 6d.

Entrance Regulations. Army:—

Staff College. (Camberley.) 1925. 1d.

See also MEDICAL CORPS.

Equipment. Pattern 1908 Web, Infantry, 1913. 2d.

See also VALISE EQUIPMENT.

Equipment Regulations:—

Part I. 1923. 2s.

Amendments Nos. 2 to 21. 1d. each. No. 17. 2d.

Equipment Regulations—continued.

Part 2. Details:—

Section.

I. 1930. Infantry and Military Foot Police (Regular Army). 9d. Amendment No. 3. 1d.

Ia. Infantry Depôts (Regular Army). 1930. 2d. Amendment No. 2. 1d.

II. Household Cavalry, Cavalry of the Line, Cavalry Depot, Military Mounted Police. 1s. 6d. Amendments Nos. 1 to 9. 1d. each.

III. Army Service Corps (Regular Army). 1913. (Reprinted, with Amendments published in A.O. up to Dec. 31, 1915.) 6d.

Amendment No. 1. March 1928. 1d.; No. 2. Jan. 1929. 1d.; No. 3. March 1928. 1d.

IV. IVa, IVb, IVc and IVd. R.A. Ordnance Corps; R.A. Pay Corps; R.A. Veterinary Corps; Corps of Military Accountants; Army Educational Corps. June 1923. 2d.

Amendment No. 1. March 1928. 1d.; Amendment No. 1. Nov. 1928. 1d.; No. 2. Jan. 1929. 1d.; No. 3. June 1929. 1d. No. 1. 1930. 1d.

V. Royal Army Medical Corps (Regular Army). 1928. 2d. Amendment No. 1. 1d.

VI—IX. R.M. Academy; R.M. and Staff Colleges; Garrison Staff and Schools of Instruction; Military Prisons, Detention Barracks and Military Provost Staff Corps (Regular Army). 1914. (Out of print).

VI. Amendment No. 1. July 1928. 1d.; No. 2. June 1929. 1d.

VII. Amendment No. 1. June 1928. 1d.

VIII. Amendment No. 1*. June 1928. 1d.

IX. Amendments Nos. 1 to 4. 1d. each.

Section.

Xa. Engineer, General, Fortress Survey, Railway and Depot Units. Peace and War (Regular Army). 1914. 2d. Amendments Nos. 1 to 4. 1d. each. 1929. 6d. Amendments Nos. 1 to 10. 1d. each.

Xb. Field Troop (Regular Army). 1912. 2d.

Xc. Divisional Engineers (Territorial Army). 1929. 3d. Amendment No. 1. June 1929. 1d.

Xd. Divisional Signal Company (Regular Army). 1914. 2d. 1930. Anti-Aircraft Searchlight Units, Royal Engineers (Territorial Army). 6d.

Xe. Signal Company (Wireless) (Regular Army). 1913. 2d.

Xf. Headquarters Signal Units (Regular Army). 1914. 2d.

Xg. Signal Company (Cable) (Regular Army). 1912. 2d.

Xh. Signal Squadron (Regular Army). 1914. 2d.

Xj. Signal Troop with Cavalry Brigade (Regular Army). 1912. 2d.

Xn. Field Squadron (Regular Army). 1914. 2d.

XIa. Horse Artillery with Q.F. 13-Pr. Equipment Brigade. Headquarters Battery Brigade Ammunition Column, with Amendments up to and including Dec. 1913. 1s. 6d. Amendments. June 1927. 3d.; Nos. 1 to 14. 1d. each.

XIb. Field Artillery with Q.F. 18-Pr. Equipment (Regular Army). 1926. 2s. 6d. Amendments, May 1927. 3d.; Nos. 1 to 17. 1d. each.

XIc. Field Artillery. Q.F. 4.5-in Howitzer (Regular Army). 1926. 1s. Amendments, June 1927. 1d. Nos. 1 to 16. 1d. each.

Equipment Regulations—continued.

Part 2. Details—continued.

Section.

- XId. Reserve Brigades with Q.F. 18-Pr. Equipment, Horse and Field Artillery. Staff and Depôts. Riding Establishment, School of Gunnery (Horse and Field), and Mounted Band (Regular Army). 1914. 6d. Amendments No. 1*. Jan. 1928. 1d.
- XIe. Pack Artillery with Q.F. 3-7-in. Howitzer Equipment (Regular Army). (1) Brigade Headquarters. (2) Battery. 1927. 1s. 6d. Amendments Nos. 1 to 12. 1d. each.
- XIIa. Royal Garrison Artillery (Regular Army). 1914. 2s. 6d. Amendment, May 1927. 2d.; Nos. 1 to 17. 1d. each.
- XIIb. Royal Regiment of Artillery Movable Armament and Machine Guns in Armaments Provisional with Amendments up to Dec. 31, 1923. 3s. Amendments, Nov. 1926. 3d.; Nos. 1 to 13. 1d. each.
- Part 3. Territorial Force. Feb. 1927. 1s. 6d. Amendments to Part 1. No. 1*. Oct. 1927. 1d. Amendments to Parts 1, 2 and 3. March 1913. 2d.; July 1913. 2d.; Nov. 1913. 1d.; April 1914. 2d.; Sept. 1920. 2d.; Aug. 1924. 2d.; Nov. 1924. 1d.; June 1925. 1d.; Dec. 1925. 1d.; Feb. 1926. 1d.; April 1926. 1d.; June 1926. 1d.; Aug. 1926. 1d.; Jan. 1927. 2d.; March 1927. 1d.; June 1927. 1d.; Aug. 1927. 2d.
- Amendments to Parts 1 and 2. Dec. 1920. 3d.; May 1925. 1d.; Oct. 1925. 1d.; Nov. 1926. 1d.
- Amendments to Parts 1 and 3. Feb. 1924. 2d.
- Amendments to Part 2. Feb., July (two issues). Aug. 1914. Feb. 1920. Each 1d.
- Amendments to Part 3. Nos. 1 to 15 and No. 20. 1d. each.
- Amendments to Part 3, Section IX. Nos. 1, 2 and 5. 1d. each.
- Amendments to Part 3, Section X. No. 1. July 1928. 1d. No. 2. Sept. 1928. 1d.
- X. (a). 1929. Engineers. 3d. Amendments Nos. 1 and 2. 1d. each.
- X. (b). 1929. Field Squadron R.E. 2d. Amendment No. 1. 1d.
- X. (c). Divisional Engineers (Territorial Army). 1929. 3d. Amendments Nos. 1 and 2. 1d. each.
- X. (d). 1930. Anti-Aircraft Searchlight Units, Royal Engineers (Territorial Army). 6d. Amendment No. 1. 1d.

Section.

- XIIc. Medium Artillery with B.L. 60-pr. guns. 6-inch 26 cwt. Howitzers. Regular Army. 1. Brigade Headquarters; 2. Batteries. Aug. 1929. 1s. 6d. Amendments Nos. 1, 2 and 6. 1d. each.
- XIIIa. 1929. Royal Corps of Signals, General Scales (Regular Army and Supplementary Reserve Units). 4d.
- XIV. Cavalry School, Netheravon (Regular Army). 1914. 2d.
- XV. Camel Corps School, Egypt (Regular Army). 1914. 2d.
- XVI. Special Reserve. 1913. 4d.
- XVII. Officers Training Corps. 1929. Amendments Nos. 1 to 5. 1d. each.
- Practice Batteries and Drill Guns (Fixed Mountings) of the Royal Garrison Artillery (Part 2, Sections XIIa and XVI, and Part 3). 1909. 1s. 6d.

Examination Papers (All published papers of which the dates are omitted are out of print) :—

- Boys for Enlistment into the Army for Training as Tradesmen. Competitive Examination, July, 1923. 6d.
- Qualifying Certificates. Sept. 1905; March 1906; Sept. 1909; March, Sept. 1910; March, Sept. 1911; March 1912. 6d. each.
- Entrance: R.M. Academy; R.M. College; Indian Army College, Wellington. Nov.-Dec. 1915. 1s.
- Entrance: R.M. Academy; R.M. College; Indian Army College, Quetta. Cadetships in the Royal Navy (Special Entry). March 1918. 6d.
- Entrance: Royal Military Academy; Royal Military College; Royal Air Force. Supplementary First Appointments in the Royal Marines; Cadetships in the Royal Navy (Special Entry). June 1920. 2s.
- Entrance: R.M. Academy, Woolwich; R.M. College, Sandhurst; Royal Air Force; Supplementary First Appointments in the Royal Marines; Cadetships in the Royal Navy (Special Entry); Indian Police Force; Police Force of the Straits Settlements, The Federated Malay States, and the Unfederated Malay States. June and July 1921. 3s. 6d.
- Entrance: R.M. Academy, Woolwich; R.M. College, Sandhurst; Royal Air Force. Nov. 1921. 2s.
- Entrance: R.M. Academy, Woolwich; R.M. College, Sandhurst; Royal Air Force; Royal Marines; Royal Navy Cadets; Indian Police Force and Ceylon and Far Eastern Police Forces, June and July 1922. 1s. 6d.
- R.M. Academy, Fourth Class; R.M. College, Fourth, Third, and Second Divisions. July, Dec. 1904. Each 1s. June 1905. 1s.
- R.M. Academy, Fourth Class; R.M. College, Senior Division, Dec. 1905. June, Dec. 1906. July, Dec. 1907. 1s. each.
- Officers for Promotion. Dec. 1912; May and Dec. 1913; April 1914. Each 1s. Oct. 1921. 1s. 6d. Oct. 1922. 1s. 6d. April 1924. 1s. 3d. April 1925. 1s. 3d. Oct. 1925. 1s. March 1926. 1s. Oct. 1926. 6d. March 1927. 2s. 6d. Oct. 1927. 2s. 6d. March 1928. 2s. 6d. Oct. 1928. 2s. 6d. March 1929. 1s. 6d. March 1930. 3s. 6d. March, 1931. 3s. 6d.
- Do. Report on the Work submitted. March 1926. 3d.
- Militia, Imperial Yeomanry, and University Candidates. Oct. 1906. 1s.
- Officers' Training Corps :—
- Cadets of the Senior Division. Certificate A. Dec. 1908. 6d.
- Cadets of the Junior and Senior Divisions. Certificates A and B. Spring of 1909. Nov. 1911; March, Nov. 1912; March 1914. Each 6d.
- March 1928. 2s. 6d. Nov. 1928. 2s. 6d. March 1929. 2s. 6d.
- Do. Nov. 1920. 1s. 6d.; March 1921. 2s. 6d.; Nov. 1921. 1s. 6d.; March 1922. 2s.; Nov. 1922. 1s.; March 1923. 1s.; Nov. 1923. 1s.; Nov. 1924. 1s.; March 1925. 1s.; Nov. 1925. 1s.; March 1926. 1s.; Nov. 1926. 3s. 6d.; March 1927. 2s. 6d.; Nov. 1928. 2s. 6d.; March 1929. 2s. 6d.
- Foreign Languages. Modern. June, 1919. 1s.
- Do. Jan. 1920. 3s.
- Do. June 1920. 2s.
- Do. Jan. 1921. 3s.
- Do. June 1921. 5s.
- Do. Jan. 1922. 1s. 6d.

Examination Papers—continued.

- Staff College. Admission. July 1911; June-July 1912; June-July 1913. 1s. each.
 Staff Colleges at Camberley and Quetta. Report on the Examination for Admission, with Examination Papers for the year following and Remarks of the Examiners thereon. Feb.-March 1922. 2s. 6d. (2s. 3d.); Feb.-March 1924. 4s. 6d.; Feb.-March 1925. 1s.; Feb.-March 1927. 4s. 6d.; Feb.-March 1928. 4s. 6d.; Feb.-March 1929. 5s.

Family Allowance. See PAY FOR SOLDIERS and SEPARATION ALLOWANCE.

Field Service Manuals :—

- Ammunition Column. Divisional. New Armies. 1915. 3d.
 Artillery. Heavy (B.L. 60-pr.) Battery and Ammunition Column. Expeditionary Force. 1916. 3d.
 Do. Horse. Brigade. 13-pr. Q.F. 1908. 3d.
 Engineers. Bridging Train. Expeditionary Force. 1915. 3d.
 Do. Field Company. Expeditionary Force. 1915. 3d.
 Do. Field Squadron. Expeditionary Force. 1914. 3d.
 Do. Works Company. Expeditionary Force. 1910. 3d.
 Headquarters Units. Expeditionary Force. 1911. 3d.
 Infantry (Mounted) Battalion. Expeditionary Force. 1913. 3d.
 Medical Service. Army. Expeditionary Force. 1914. 3d.
 Signal Service. Signal Company (Cable). Expeditionary Force. 1913. 3d.
 Do. Signal Company (Divisional). Expeditionary Force. 1915. 3d.

Field Service Pocket Book, 1926. Part I.—Countries other than India. 2s. Amendments No. 1. Jan. 1927. 1d.; Nos. 3 to 5. 1d. each.
 Shortened Form of Service for the Burial of the Dead. 1d.

Field Service Regulations :—

- Vol. I. Organisation and Administration. May 1923. Provisional. 9d. Amendments, Dec. 1924. 1d.
 Vol. II. Operations. 1924. 1s. Amendments (No. 1) Jan. 1926. 1d.; (No. 3) Jan. 1927. 1d.

Field Works (All Arms) Manual. 1925. 1s. 6d. Amendments No. 1. Jan. 1927. 1d.; No. 3. Oct. 1928. 1d.

Finance, Army. Two lectures given by the Army Class, London School of Economics, in March 1926. 9d.

Financial Instructions in Relation to Army Cash Accounts. Jan. 1924. 6d. Amendments, March 1925. 1d.; April 1926. 1d.; No. 1*. Oct. 1927. 1d.; No. 3. July 1928. 1d.; No. 4. July 1928. 1d.; No. 5. Dec. 1928. 1d.; No. 6. Feb. 1929. 1d.; No. 7. March 1929. 1d.; No. 8. April 1929. 1d.; No. 9. May 1929. 1d.

Fire Services, Army, Regulations. 1924. 2d. Amendments, April 1927. 1d.; Nos. 1 to 4. 1d. each.

Foods. Analyses and Energy Values of. 6s.

Foreign Press. Supplements to the Daily Review of the :—

- Economic. Fortnightly, commencing with that of Aug. 20, 1918 to Aug. 12, 1919. Each 6d.
 Medical. (Compiled by the Medical Research Committee.) Monthly, commencing with that of June 1918 to April 1919. Each 1s.
 Reconstruction. Fortnightly, commencing with that of Aug. 13, 1918 to July 30, 1919. Each 6d.
 Technical. Fortnightly, commencing with that of May 28, 1918, to Aug. 19, 1919. Each 6d.
 Index to the Economic and Reconstruction Supplements, May to Nov. 1918. 1s.
 Index to the Medical Supplement.
 Vol. I. Jan. to Dec. 1918. 1s.
 Vol. II. Jan. to April 1919. 1s.
 Index to the Technical Supplement, Vol. I., July to Dec. 1918. 6d.

Fortification. Permanent. For the Imperial Military Training Establishments and for the Instruction of Officers of all arms of the Austro-Hungarian Army. 7th edition. Translated. 4s.

Franco-German War, 1870-71. Translated from the German Official Account.

First Part :—History of the War to the downfall of the Empire :—

- Vol. 1 (Secs. 1 to 5). Outbreak of hostilities to Battle of Gravelotte. (Out of print)
 Vol. 2 (Secs. 6 to 9). Battle of Gravelotte to downfall of Empire. (Out of print)

Second Part :—History of the War against the Republic :—

- Vol. 1 (Secs. 10 to 13) :—Investment of Paris to Re-occupation of Orleans by the Germans. 26s.
 Vol. 2 (Secs. 14 to 18) :—Events in Northern France from end of Nov. In North-west from beginning of Dec. Siege of Paris from commencement of Dec. to the Armistice. Operations in the South-east from middle of Nov. to middle of Jan. 26s.
 Vol. 3 (Secs. 19 and 20) :—Events in South-east France from middle of Jan. to Termination of Hostilities. Rearward Communications. The Armistice. Homeward March and Occupation. Retrospect. 31s. 6d.

Also separately, Sections in paper covers, and Plans unmounted :—

- Section.
 1.—8. (Out of print)
 9. Proceedings on German Coast and before Fortresses in Alsace and Lorraine. Battle of Noisseville. General review of War up to Sept. 4s. 6d.
 10. Investment of Paris. Capture of Toul and Strassburg. 6s.
 11. Events before Paris, and at other points of Theatre of War in Western France until end of Oct. 5s. 3d.
 12. Last engagements with French Army of the Rhine. Occurrences after fall of Strassburg and Metz to middle of Nov. 4s. 6d.
 13. Occurrences on Theatre of War in Central France up to Re-occupation of Orleans by the Germans.
 14. Measures for Investment of Paris up to middle of Dec. 4s.
 15. Measures for protecting the Investment of Paris and Occurrences before French Capital to commencement of 1871. 2s. 6d.

Franco-German War, 1870-71—continued.

Section.

16. Proceedings of Second Army from commencement of 1871 until the Armistice. 3s. 6d.
17. Proceedings of First Army from commencement of 1871 until the Armistice. 3s.
18. Occurrences on South-eastern Theatre of War up to middle of Jan. 1871. Events before Paris from commencement of 1871 to the Armistice. 8s.
19. Occurrences on South-east Theatre of War from middle of Jan. 1871. Proceedings in rear of German Army and in Coast Provinces, from Nov. 1870 until the Armistice. 13s. 6d.
20. General Retrospect of War from beginning of Sept. 1870 to Cessation of Hostilities. Armistice and Peace Preliminaries. Return of German Army and Peace of Frankfurt. The Occupation. The Telegraph. Post, Supply of Ammunition, Commissariat, Hospital Services, Divine Service, Military Justice, Recruitment, and Home Garrisons. Results. 5s.

Analytical Index. 1s. 6d.

Plans:—

4. Battle of Colombey-Neuilly. 3d.
- 5A. Battle of Vionville—Mars la Tour. Position of Contending Forces at Noon. 3d.
- 5B. Battle of Vionville—Mars la Tour. Position of Contending Forces from 4 to 5 p.m. 3d.
- 9A. Battle of Sedan. Position of Contending Forces towards Noon. 3d.
- 9B. Battle of Sedan. Position of the Germans in the afternoon shortly before the end of the struggle. 3d.

See also SIEGE OPERATIONS.

French Words and Phrases with English Pronunciation. Notes on French Measures, Abbreviations and Terms used on French Maps, with English Equivalents. Short Vocabulary of. 1d.

Garrison and Regimental Institutes. Rules for the Conduct of. 1929. Amendments. No. 1. July 1929. 1d. No. 4. 1d.

Gas Casualties. Manual of Treatment. 1930. 2s.

Gas, Defence Against. 1927. (Provisional.) 2d. Amendments Nos. 1 to 4. 1d. each.

German Army. Cavalry. Drill Regulations. 1909. 3d.
Foot Artillery. Drill Regulations. Part IV. The Fight. 1909. 3d.

Do. Manœuvres Regulations. 1908. 3d.
See also ELECTRIC LIGHT.

Germany. The Campaign of 1866 in:—
With 22 Plans in Portfolio. 1872. Reprinted 1907. 6s.
Moltke's Projects for. 1s.
Moltke's Correspondence during. Précis. With 4 Plans. 1s.

Government Department. Electrical Specifications:—

- No. 1, 1929. Electric Cables. J. K. & L. Classes. (Rubber Covered for Electric Power and Light.) 6d.
- No. 2. Direct Current Motors—
(1) From 1 B.H.P. to 100 B.H.P. for Continuous Service.
(2) Totally enclosed from 1 B.H.P. to 100 B.H.P. for Continuous Service.

Government Department. Electrical Specifications—continued.

- (3) Short Time Rated from 1 B.H.P. to 100 B.H.P. (Open and Totally enclosed Types.) 4d.
- No. 3. Indicating Ammeters, Voltmeters, Wattmeters, Frequency and Power Factor Meters. 2d.
- No. 4. Dry Cells for Telephone and similar purposes. 1d.
- No. 5, 1929. Electric Cables, A, B, and C Classes (Rubber Covered for Telegraph and Telephone Purposes.) 3d.
- No. 6. Switch with Fuses (for Pressure up to and including 250 Volts for ordinary duty with working current not exceeding 30 Amperes). 1d.
- No. 7. Electric Cut-Outs for Low Pressure for Ordinary Duty with Working Currents up to 200 amperes. 2d.
- Nos. 1-7. Errata. 1d.
- No. 8. Flexible Electric Cables, M. and N.F. Classes (Rubber Covered for Electric Power and Light.) 6d.
- No. 9. Electric Cables "N" Class (Rubber Covered for Electric Power and Light.) 6d.
- No. 10. Flexible Electric Cords, U., U-W and U-N Classes (Rubber Covered for Electric Power and Light.) 6d.
- No. 11. Dry Cells for Torches and Similar Purposes. 2d.
- No. 12, 1929. Electric Cables. K.P. and L.P. Classes. (Paper insulated for Electric Power and Light.)
- No. 13. Leclanche Cells. Sack Element. 2d.
- No. 14. Inert Cells for Bell Ringing and Telephone Purposes, etc. 2d.
- No. 15. Alternating Current Motors. 6d.

Government Department Specifications for General Stores:—

- No. T.G. 1.—Skins, Chamois Leather. 1d.
- No. T.G. 2.—Leather Belting. 3d.
- No. T.G. 3.—Hides and Leather (other than Chrome Leather). 2d.
- No. T.G. 4.—Upholstery Hides, Binding, Button and Studs. 2d.
- No. T.G. 5.—Anvils. 4d.
- No. T.G. 6.—Physical Training Equipment. 4d. Amendment No. 1. 1d.
- No. T.G. 7.—Physical Training Equipment. Clubs, Indian Single-sticks. 2d.
- No. T.G. 8.—Physical Training Equipment. 4d.
- No. T.G. 9.—Ordinary Packing Cases (Returnable Storage Cases). 2d.
- No. T.G. 10.—Brooms and Brushes. Part I. Set or Pan. Part II, Drawn and Machine Made. 6d. Amendments No. 1. 1931. 1d.
- No. T.G. 11.—Painters' Brushes. 4d. Amendment No. 1. 1d.
- No. T.G. 12.—Woodworkers' Edge Tools. Part I. 2d.
- No. T.G. 13.—Hammers. 2d.
- No. T.G. 14.—Vices, Cramps and Clamps. 4d.
- No. T.G. 15.—Tools, Smiths' and Tools, Tinsmiths'. 3d.
- No. T.G. 17.—Shovels. 3d.
- No. T.G. 18.—Clasp Knives. 1d.
- No. T.G. 21.—Cooking Utensils, Cast Iron. 3d. Amendments No. 1. 1931. 1d.
- No. T.G. 23.—Soaps. 2d.
- No. T.G. 24.—Soda Crystals (Sodium Carbonate Decahydrate). 2d.
- No. T.G. 26.—Steel Wire Brushes. Wire Handled Brushes. 3d.
- No. T.G. 33.—Plywood Packing Cases for Ordinary Purposes. 1½d.
- No. T.G. 34.—Crates or Skeleton Cases. 1d.

Textiles and Clothing:—

- No. T.C. 1.—Cloths, Tartans and Tweeds. 1d.
- No. T.C. 2.—Serges, Worsted, etc. 1d.

Textiles and Clothing—continued.

- No. T.C. 3.—Shirtings. 1*d*.
 No. T.C. 4.—Miscellaneous. 1*d*.
 No. T.C. 5.—Cotton Fabrics. 1*d*.
 No. T.C. 6.—Linen and Jute Fabrics. 1*d*.
 No. T.C. 7.—Frocks, White. 1*d*.
 No. T.C. 8.—Drawers, Brown Cotton. 1*d*.
 No. T.C. 9.—Sweaters, White. 1*d*.
 No. T.C. 10.—Jerseys, Striped Gymnasia. 1*d*.
 No. T.C. 11.—Vest, Cotton Gymnasia. 1*d*.
 No. T.C. 12.—Jacket, Pyjama. Trousers, Pyjama. 1*d*.
 No. T.C. 13.—Shirt, Cotton, Hospital. 1*d*.
 No. T.C. 14.—Collars. 1*d*.
 No. T.C. 15.—Ties. 1*d*.
 No. T.C. 15A.—Ties. 1*d*.
 No. T.C. 16.—Drawers, Hospital. 1*d*.
 No. T.C. 17.—Gloves. 1*d*.
 No. T.C. 18.—Socks. 1*d*.
 No. T.C. 19.—Shirts. 2*d*.
 No. T.C. 20.—Vests. 1*d*.
 No. T.C. 21.—Drawers. 1*d*.
 No. T.C. 22.—Jerseys blue, brown, navy-blue, pullover. 1*d*.
 No. T.C. 23.—Cap Comforters, Woollen, drab, Universal (Pattern No. 201). 1*d*.
 No. T.C. 25.—Underclothing, Cellular. 2*d*.
 No. T.C. 101.—Hessian, Packing. 1*d*.
 No. T.C. 111.—Dowlas. White and Tan. 1*d*.
 No. T.C. 113.—Blind Material, Brown Holland Linen. 1*d*.
 No. T.C. 114.—Linen Sheeting. 1*d*.
 No. T.C. 115.—Ticken. Blue Striped. 1*d*.
 No. T.C. 116.—Curled Hair. 1*d*.
 No. T.C. 117.—Netting, Sand-Fly; Netting, Mosquito. 1*d*.
 No. T.C. 118.—Sheets, Cotton. 1*d*.
 No. T.C. 119.—Counterpanes, Hospital. 1*d*.
 No. T.C. 122.—Pillows, Feather. 1*d*.
 No. T.C. 125.—Feathers. 1*d*.
 No. T.C. 161.—Covers, Waterproof, Black, G.S. Cotton Duck Fabric. 3*d*.

Guernsey and Alderney Royal Militia. Regulations. With the Militia Laws relating to the Islands. Provisional. 3*s*.

Guns. Handbooks for:—

- 303-inch Vickers Machine Gun and Tripod Mounting, Mark IV. 1930. 6*d*.
 2-75-inch B.L. Converted Mark I and Mark I Guns on Mark I Carriage, 1920. Amendments No. 1. Sept. 1923. 1*d*.
 Stokes 3-inch Trench Mortar. M.L. Land Service. 1919. 1*s*. 6*d*.
 3-inch Q.F. 20-cwt. Marks I, I*, I**, I***, III and III*. Guns on Marks IV H.A. Mounting. Land Service, 1930. 5*s*. Amendment No. 1. 3*d*.
 3-7-inch Q.F. Mark I Howitzer on Mark I, II and III Carriage. Land Service. 1930. 7*s*.
 4-inch Q.F. Mark V Gun, Land Service, 1916. Amendments No. 2. Nov. 1923. 1*d*.

[Notified in Army Orders for August, 1931]

Crown Copyright Reserved



THE WAR OFFICE

SMALL ARMS TRAINING

VOLUME V

SMALL ARMS RANGE REGULATIONS

1931

LONDON:

PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE
 To be purchased directly from H.M. STATIONERY OFFICE at the following addresses:
 Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh;
 York Street, Manchester; 1, St. Andrew's Crescent, Cardiff;
 15, Donegall Square West, Belfast;
 or through any Bookseller.

1931

*Price 1*s*. 0*d*. net.*

57-496-5-31

By Command of the Army Council,

H. J. Creedy
..

THE WAR OFFICE,
31st August, 1931.

CONTENTS

CHAPTER I

GENERAL INSTRUCTIONS FOR THE USE AND PROCEDURE FOR THE PROVISION OF CLASSIFICATION, BATTLE PRACTICE AND 30-YARDS RANGES

SEC.	PAGE
1. Responsibility and maintenance	1
2. Types of ranges	2
3. Procedure for the provision of ranges	2
4. Range wardens and care of ranges	8
5. Range rules	10

CHAPTER II

SELECTION OF SITES FOR AND CONSTRUCTION OF CLASSIFICATION RANGES

6. General considerations	11
7. Danger area	11
8. Markers' galleries and stop butts	22
9. Firing points	33
10. Target frames	34
11. Distinguishing marks and flagstaffs... ..	35
12. Workshops and stores	37
13. Telephones	37
14. Sequence of construction	40
15. Special arrangements for anti-aircraft practice with light automatics	42
16. Special arrangements for Vickers machine-gun and light automatic practices	47

CHAPTER III

30-YARDS RANGES

SEC.		PAGE
17.	Construction and selection of sites ...	49
18.	Safety precautions ...	54
19.	Target stores and shelters ...	57

CHAPTER IV

BATTLE PRACTICE RANGES

20.	General considerations ...	58
21.	Danger areas for battle practice and tank ranges ...	59
22.	Construction ...	62
23.	Communication ...	63
24.	General ...	69

CHAPTER V

MINIATURE CARTRIDGE RANGES (.22-IN. BORE)

25.	Uses of miniature ranges ...	70
26.	Instructions for inspection of miniature ranges ...	71
27.	Range and penetration of .22-in. ammunition ...	75
28.	Types of miniature ranges ...	76
29.	Selection of sites and construction of outdoor miniature ranges ...	78
30.	Construction of indoor miniature ranges ...	88
31.	General instructions regarding safety precautions on all types of miniature ranges ...	104

CHAPTER VI

REVOLVER RANGES

SEC.		PAGE
32.	Selection of ranges and danger area ...	105
33.	The revolver trench ...	109
34.	Revolver battle practice range ...	113

CHAPTER VII

GRENADE THROWING AND FIRING AREAS

35.	Dummy grenades ...	113
36.	Live grenades—High explosive ...	119
37.	Live grenades—Smoke ...	120

CHAPTER VIII

BAYONET TRAINING COURSES

38.	General ...	123
39.	Apparatus for preliminary training ...	124
40.	Assault courses ...	124

CHAPTER IX

TARGETS AND TARGET APPARATUS

41.	General ...	127
42.	Targets and apparatus for preliminary training ...	128
43.	Targets for classification ranges ...	136
44.	Target apparatus for classification ranges ...	156

SEC.		PAGE
45.	Targets for battle practice ranges and for individual battle practices on classification ranges	161
46.	Target apparatus and arrangements for battle practice ranges	161
47.	Representative targets for 30-yards ranges and miniature ranges	180
48.	Target apparatus for 30-yards ranges	186
49.	Target apparatus for miniature ranges, and notes on making and fitting up landscape	194
50.	Targets for revolver ranges	213
51.	Target apparatus for revolver practices	218

APPENDICES

I.	Stores for preliminary training	226
II.	Stores for classification ranges	228
III.	Stores for battle practice ranges	230
IV.	Stores for 30-yards ranges	232
V.	Stores for miniature ranges	233
VI.	R.A.S.C. and R.A.O.C. stores for assault courses for bayonet training	236
VII.	R.E. stores for bayonet training course	239
VIII.	R.E. stores for dummy grenade course	241
IX.	Stores supplied by the R.A.O.C.	242
X.	Stores supplied by the R.E.	243
	INDEX	245

LIST OF PLATES

CLASSIFICATION RANGES

	PLATE NO.	PAGE
Danger area	1	13
Danger areas of adjoining ranges	2	15
Effect of uphill line of sight	3	19
Effect of hollow site	4	21
Markers' gallery	5	23
Markers' gallery, detail for normal ranges	6, 7 & 8	25, 26, 27
Markers' gallery, detail for long ranges	9	28
Ricochets	10	31
Target numbers on stop butt	11	36
Workshop, corrugated iron	12 & 13	38, 39
Mirrors, double reflecting	14	41
Large (6') and small (4') targets	57	141
Grouping targets	58	142
Snaphooting targets	59	143
Target frame, "Hythe" pattern	70	158
Spotting disc	71	159
Marking disc	71	159
"Miss" flag	71	159
Grouping ring	72	160
Socket way for screen targets	117	225

BATTLE PRACTICE RANGES

Effect of uphill line of sight	3	19
Effect of hollow site	4	21
Ricochets	10	31

	PLATE	PAGE
	NO.	
Workshop, corrugated iron ...	12 & 13	38, 39
Mirrors, double reflecting ...	14	41
Danger area ...	21	61
Shelter for markers ...	22	64
Shelter for men working drum ...	23	65
System of communications ...	24	66
Target for fire control practice ...	50	130
Dummy screens for fire control practice ...	51	131
Figure target No. 2 (three-quarter figure)	73	162
Figure target No. 3 (Kneeling figure) ...	74	163
Figure target No. 4 (Lying figure) ...	75	164
Figure target No. 5 (Covered figure) ...	76	164
Figure target No. 6 (Crossing figure) ...	77	165
Falling steel plate ...	78	166
Disappearing figure target No. 2 ...	79	167
Disappearing figure target No. 3 ...	80	168
Alternative disappearing figure targets (Nos. 2 and 4) ...	81	169
Trolley for advancing and retiring figure targets ...	82	172
Trolley for targets moving to a flank ...	83	173
Drum for working trolley ...	84	174
Bar for disappearing targets ...	85	176
Falling figure target ...	86	177

30-YARDS RANGES

General lay-out of range ...	17	51
Pool of water in lieu of ricochet pit ...	18	53
Correct siting of targets ...	19	55

	PLATE	PAGE
	NO.	
Telescopic leg ...	20	56
Landscape targets ...	87	185
Target frame ...	88	187
Snaphooting apparatus ...	89	189
Snaphooting apparatus ...	90	190
Snaphooting apparatus ...	91	191
Disappearing man target ...	92	193
Crossing man target ...	93	195
Grouping ring { Also for use on Minia- Grouping rectangle { ture range	94	196
Socket way for screen targets ...	117	225

MINIATURE RANGES

Site for outdoor range ...	26	81
Natural stop butt ...	27	85
Enclosed type of range ...	28	87
General lay-out of indoor range ...	29	89
Stop butt for indoor range ...	30	91
Window protection ...	31	93
Roof protection ...	32	94
Stop butt with bullet catcher ...	33	96
Bullet catcher for short ranges ...	34	97
Screens for use in lieu of firing trench ...	35	103
Landscape targets ...	87	185
Grouping ring { Also for use on 30- Grouping rectangle { yards range	94	196
Bar for disappearing target ...	95	198
Method of fixing disappearing target bar	96	199

	PLATE NO.	PAGE
Surprise target	97	200
Flank-moving target	98	201
Flank-moving target	99	202
Roller target apparatus	100	203
Scissors extension apparatus	101	204
Battle practice landscape—Targets down	102	206
Battle practice landscape—Targets up ...	103	207
Arrangement of moving target apparatus	104	207
	& 105	208
Landscape bank in wooden box (for use in drill hall)	106	209
Arrangement of butts and targets on dual ranges	107	214
Portable bullet catcher	108	215

REVOLVER RANGES

Danger area	36	107
General lay-out of range not requiring danger area	37	108
Range for mounted practice	38	110
Revolver trench	39	112
Revolver battle practice range	40	114
Grouping target	109	216
"Sledge" apparatus for charging targets	110	217
Figure target No. 2 (three-quarter figure)	111	219
Figure target No. 2, marked for trench practice	112	220
Apparatus for traversing targets	113	221
Snaphooting target	114	222

	PLATE NO.	PAGE
Apparatus for trench targets	115	223
Grouping rectangle	116	224
Socket way for screen target	117	225

LIGHT AUTOMATIC AND MACHINE-GUN TRAINING

Light automatic grouping screen	60	144
Light automatic screen	61	145
Machine-gun target	66	155
Machine-gun stoppages target	67	155
Machine-gun target for Parts II Territorial Army (30-yards range)	69	157
Socket way for screen target	117	225

ANTI-AIRCRAFT TRAINING

Arrangements for A.A. targets	15	44
Relative position of gun, target and stop butt	16	47
Model aeroplane on pole	49	129
Target A.A.1	62	147
Aeroplane silhouettes for use with A.A. targets	63	148
Template for use with A.A.1 target	64	149
A.A. moving target and winding drum ...	65	152

GRENADE TRAINING

Lay-out of apparatus for "High wire" practice	41	116
---	----	-----

	PLATE NO.	PAGE
Lay-out of apparatus for "Shell hole" and "Cone" practice	42	117
Lay-out of apparatus for "Cage" and "Lying" practices	43	118
Danger area for H.E. bombing practice ...	44	120
Emplacements	45	121

BAYONET TRAINING

Assault course apparatus	46	125
Lay-out of assault course	47	126
Training stick	48	126

PRELIMINARY TRAINING

Target for fire control practice	50	130
Dummy screen for fire control practice ...	51	131
Aiming rest	52	134
Tripod rest	53	135
Aim corrector No. 1 Mk. II (S.M.L.E.) ...	54	137
Aim corrector Mk. I for A.A. sights of Lewis guns	55	138
Aiming disc	56	139

TANK RANGES

Danger area required for A.F.Vs. firing 303-in. ammunition	25	67
--	----	----

SMALL ARMS TRAINING VOLUME V

SMALL ARMS RANGE REGULATIONS 1931

CHAPTER I

GENERAL INSTRUCTIONS FOR THE USE AND PROCEDURE FOR THE PROVISION OF CLASSIFICATION, BATTLE PRACTICE AND 30-YARDS RANGES

1. *Responsibility and Maintenance*

1. All W.D. ranges will be in charge of the Royal Engineers: the provision and maintenance of all appliances, including all targets the use of which is contemplated by the regulations, will be an engineer service.

2. Units using ranges are responsible for the cleanliness of all parts of the ranges.

3. For musketry camps, special staffs will not *usually* be required. The senior officer in camp will act as commandant, and will make all arrangements as to arrivals, departures, allotment of camping grounds, ranges, etc. In exceptional circumstances an officer (preferably a subaltern), as camp adjutant and quartermaster, and a clerk (lance corporal or private) may be detailed to assist the camp commander.

4. The officer i/c administration at command headquarters will arrange for an officer or N.C.O. of the Royal Corps of Signals to inspect all range telephones within the command periodically and to arrange for the instruction of range wardens in their care and maintenance when necessary.

2. Types of Ranges

1. *Classification Range*.—The general type of range constructed for the execution of classification practices with .303-inch ammunition. (See Chapter II.)

2. *30-yards Range*.—A range for use with .303-inch ammunition at 30 yards, and provided with such protection, either natural or artificial, as to dispense with the need of a danger area. (See Chapter III.)

3. *Battle Practice Range*.—A range specially constructed and provided with suitable apparatus for the execution of battle practices under conditions approaching those of active service. (See Chapter IV.)

4. *Miniature Cartridge Range*.—A range for use with .22-inch ammunition only. (See Chapter V.)

3. Procedure for the Provision of Ranges

1. When it is proposed to construct a new classification, battle practice, 30-yards or revolver range for the use of the regular forces, or to reconstruct an existing one, the matter will be dealt with in the first instance by the general staff at command headquarters, who will advise the G.O.C.-in-C. on all questions relating to the necessity for the proposals, the locality, etc.

2. The question of policy should then be referred to the War Office. When the general preliminaries are settled, the subject will be dealt with by the officer i/c administration.

3. If it is decided to proceed with the work, the C.R.E. of the district concerned will request the O.C. troops at his station to assemble a board of three or more officers to report upon the proposal.

4. The board should consist of an officer not under the rank of major, specially selected on account of his knowledge and experience of musketry duties, an officer of the general staff, an R.E. officer, and, where quartering of the troops has to be considered, a R.A.S.C. officer. When possible an expert officer deputed by the Commandant, Small Arms School, will attend.

5. When a board assembles to consider proposals affecting the safety of rifle ranges, the following information should be available :—

Danger area.—

- i. Does the whole of this area belong to the W.D. or to the Association in the case of T.A. ranges ?
- ii. If neither of the above, then is it held on lease ? (Duration and terms of renewal of lease to be stated.)
- iii. If neither (i) nor (ii)—Have firing rights been acquired over the whole area ?
- iv. Do the local bye-laws contain any reference to the range and to the existing rights ?
- v. If no firing rights exist over the area, can they be acquired ?

If the answer to (i), (ii) and (iii) is in the affirmative, there should be no difficulty; but, if otherwise, unless the firing rights are acquired, it must be realized that :—

- (a) Building within the area cannot be prevented and the range would then have to be abandoned.
- (b) Access to the danger area cannot be prohibited and firing would have to cease until the person, or persons, etc., have moved out of the area.

6. The board will make a careful inspection of the site, and will prepare a report on A.F. K 1309 of a nature to give complete information on all points. This is to be accompanied by an Ordnance map, 6-inch scale, contoured at 50-feet vertical intervals, including all ground affected by the proposals; the length of range, position of firing points and targets and limits of danger areas will be clearly marked.

7. The report should embody information and recommendations on such of the following points as may be required, having regard to the class of range, and on all others which local conditions demand :—

- i. *Report on proposed range at*
 - (a) Name and situation of range.
 - (b) Units which will use the range, and their addresses.
 - (c) Is the range to be used for classification practices only, for battle practice only, or for both?

ii. *Details of the range.*

- (a) Length of range (yards).
- (b) Number and type of targets to be provided, and distance from centre to centre.
- (c) Nature and dimensions of stop-butt.
- (d) Nature and description of markers' gallery.
- (e) Special arrangements for anti-aircraft work.
- (f) Formation of firing points.
- (g) Telephone or other system of communication.
- (h) Workshops and target stores.
- (i) Troop shelters.
- (j) Latrines.
- (k) Water supply and drainage.

iii. *As to ground, etc.*

- (a) The length and breadth of the danger area, and nature of the soil. If below regulation size, the reason should be stated.
- (b) Character of ground in rear of targets, height, slope, etc.
- (c) Character of ground in front of targets, if rising or falling towards targets. Is it free from obstructions such as hedges, ditches, etc.?
- (d) Whether the area is purchased or leased, or if firing rights only are to be obtained. (In the latter case the proposal is not to be submitted until the written consent of the landowners is obtained.)
- (e) What arrangements are proposed to prevent persons entering the danger area while firing is in progress?
- (f) Whether the danger area is free from buildings, railways, roads, paths, etc.

iv. *Land questions, communications, etc.*

- (a) Will any new roads be required to give access to the range?
- (b) Is any diversion of right of way, or stoppage of traffic required?
- (c) Do any common rights as to grazing, etc., exist?
- (d) If land has to be purchased or leased, details should be given as to its probable cost an acre, and as to the names of the owners and the nature of their tenure.

NOTE.—Enquiries under this head must be made so as not to commit the War Office in any way.

8. This report will be passed to the C.R.E. of the district who will further consider the questions of construction of butts, firing points, etc., the purchase or hire of land and questions of right of way, the provision of new or alteration of existing electrical communications. He will prepare rough sketches to illustrate the report, and such approximate estimate of cost as may be found possible from the data available.

9. The C.R.E., after obtaining the general concurrence of the O.C. troops at the station in the proposals, will forward the report, plans, etc., through the Chief Engineer, to the officer i/c administration, for submission to the War Office, in order that sanction may be given to carry out the work.

10. Technical difficulties as regards the design may be referred direct to the Commandant, Small Arms School.

11. When a W.D. classification, battle practice, 30-yards or revolver range has been newly constructed

or reconstructed, it will be inspected by a board consisting of a specially selected officer as President, an officer of the general staff and an officer of R.E. Whenever possible, an expert officer deputed by the Commandant, Small Arms School, will attend. The board will render a report on A.F. K 1309 as to its safety and completeness through the C.R.E. of the district to the officer i/c administration.

12. When it is proposed to construct a new classification, battle practice, 30-yards or revolver range for the use of the Territorial Army, or to reconstruct or alter an existing range in such a manner as to affect the safety of it, the matter will be dealt with in the first instance by the County Association concerned, who will consult the Territorial Army Divisional or Cavalry Brigade Commander concerned as to the necessity for the service. If units controlled by more than one County Association are affected, a joint committee should be formed, and the percentage of the expense which each committee is to bear decided on.

13. The Territorial Army Divisional or Cavalry Brigade Commander will then assemble a board, constituted as far as possible as in paragraph 4 above, whose duties will be similar to those laid down in paragraph 6 above. The Territorial Army Association architect should attend the board whenever possible in order to be able subsequently to prepare an approximate estimate of the cost of the proposal. Their report (submitted on A.F. K 1309) and plans may, if technical difficulties render such a course desirable, be forwarded to the Commandant, Small Arms School, for consideration.

14. The proceedings of the board, with the A.F. K 1309 and accompanying plans, will then be submitted, through the County Association or Associations concerned (who will specify the source from which the necessary funds are to be obtained), to the officer i/c administration at command headquarters for submission to the War Office.

15. Any subsequent correspondence that may take place between the War Office and the County Association on any points which may affect the training value of the range should be communicated to the Territorial Army Divisional or Cavalry Brigade Commander concerned.

This officer's opinion will be stated in the correspondence and will be forwarded to the War Office for consideration.

16. The date on which a range has been taken into use or closed will be reported to the War Office. In the latter case the reasons for closing the range should be stated.

17. Boards should not be assembled to report on repairs or minor alterations not affecting the safety of ranges, nor is it the intention that boards should be assembled to inspect and reconsider existing ranges which have hitherto been passed as safe for use with the service rifle, and with regard to which no complaints have been made.

4. *Range Wardens and Care of Ranges*

1. The following duties in connection with ranges will be carried out, under the orders of the C.R.E., by civilian employees called range wardens :—

- i. Care of ranges and apparatus, including telephones.
- ii. Care, custody and issue of all stores.
- iii. Manufacture and repair of penetrable targets, and repair of apparatus.
- iv. All minor repairs to butts and firing points, and collection of metal from butts. (*See Sec. 40, Vol. IV, 1931.*)

2. The number of range wardens to be employed on each range will be determined by the officer i/c administration, subject to War Office approval.

3. Their general conditions of service will be those laid down for civilian employees. They will be selected by the C.R.E., preference being given to ex-soldiers. The senior range wardens on large groups of ranges will be specially selected in view of the responsible nature of the duties.

4. When ranges are in use the range wardens will take the direct instructions of the officer detailed to supervise and administer the range, or in his absence, of officers i/c parties using the range, as to hours of practice, stores, targets and apparatus required.

5. When considered necessary, troops using the range will be detailed to assist the range wardens in minor repairs to butts and firing points; such work will be performed without claim to extra pay. With these exceptions, no soldier may be employed on a rifle range, either permanently or temporarily, to assist range wardens in their duties.

5. Range Rules

1. The rules laid down in paragraphs 2 to 6, below, will be adhered to on all small arms ranges other than 30-yards ranges and indoor miniature ranges.

2. A 6-feet square red flag will be flown in a prominent position on the range whenever shooting is *about to begin or is actually taking place*.

3. As far as possible the boundaries of the danger area of any range will be marked by 4 feet by 3 feet red flags and notice boards.

4. A 4 feet by 3 feet red flag will be provided for use by the markers.

5. Another similar flag will be provided at the firing point.

6. No firing is to take place until both the flags mentioned in paras. 4 and 5 have been lowered.

7. In the case of 30-yards ranges and indoor miniature ranges, a red flag at the firing point only will be required.

8. On every range a notice will be kept giving the full particulars of the danger area and any precautions to be taken to ensure that this area is clear of persons before shooting begins. All local orders in connection with the safety of the range will also be quoted on this notice.

9. The particulars of the danger areas required for various small arms ranges and the special precautions to be taken are given in the following chapters dealing with the construction of these ranges.

CHAPTER II

SELECTION OF SITES FOR AND CONSTRUCTION OF CLASSIFICATION RANGES

6. General Considerations

1. The chief requirement of a classification range is that classification practices can be carried out with safety at the distances laid down in Vol. IV.

2. It is desirable, however, that there should be facilities for firing at even longer ranges.

3. As a general rule a site on level dry ground is the best. Even a slight rise in the direction of the line of sight is a disadvantage, as it tends to increase the range of ricochets. (See Plate 2, Figs. 2, 3 and 4.)

4. Rocky ground should be avoided on account of the increased danger of divergent ricochets, and the probable extra cost in the construction of the gallery and stop butt.

5. A damp or marshy site is also unsuitable, for the following reasons:—

- i. The danger of floods after heavy rain.
- ii. Constructional difficulties, such as the stop butt sinking, targets getting out of plumb, etc.

7. Danger Area

Single ranges

1. The danger area will vary according to local conditions (for instance, when a range is sited so that the

line of sight runs along the side of a hill, or when a spur of a hill comes within the danger area from one side only, consideration must be given to the fact that the slope will tend to throw ricochets more to the opposite side of the danger area).

2. In any case, for a new 600-yards range of eight or more targets on level ground, firing rights must be obtained over an area having a depth of not less than 2,500 yards behind the targets, with a width of 250 yards beyond the flank lines of fire at the targets; this width is to be increased to 500 yards at from 1,000 to 2,500 yards behind the targets (*see* Plate 1).

3. For ranges with less than eight targets on level ground, the width of the danger area on the outer side of the flank lines of fire may be reduced as shown below.

No. of targets.	Width 1,000 yards	
	Width at targets.	behind targets.
1-2	100 yards	250 yards.
3	125	300
4	150	350
5-6	175	400
7	200	450

Adjoining ranges

4. Whenever it is desired to construct two or more ranges on adjoining sites, a smaller danger area will be secured by an arrangement whereby their respective directions of fire converge slightly (*see* Plate 1). The danger area required by an arrangement as in Figure 3

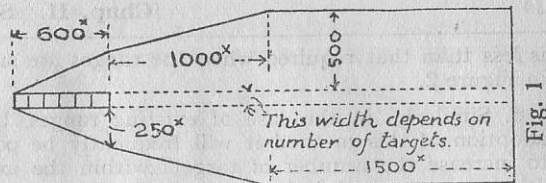


Fig. 1

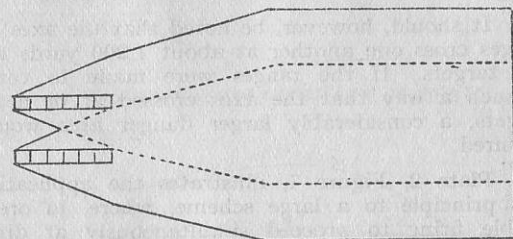


Fig. 2

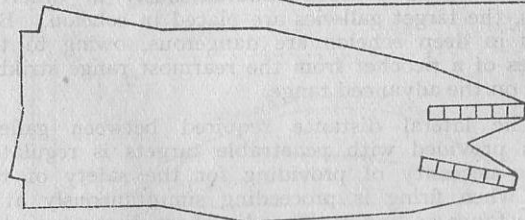


Fig. 3

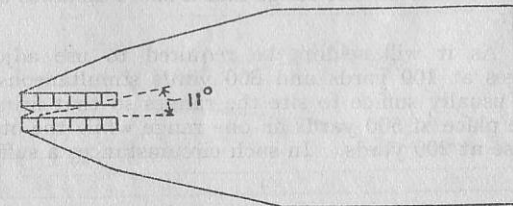


Fig. 4

is less than that required when the ranges are sited as in Figure 2.

5. Similarly, in the case of existing ranges, by the adoption of this method it will frequently be possible to increase the number of targets within the existing danger area, or with but a small addition to it.

6. It should, however, be noted that the axes of the ranges cross one another at about 1,200 yards behind the targets. If the ranges were made to converge in such a way that the axes crossed at or near the targets, a considerably larger danger area would be required.

7. Plate 2, Figure 1, illustrates the application of this principle to a large scheme, where, in order to enable firing to proceed simultaneously at different ranges, the target galleries are placed in echelon. But ranges in deep echelon are dangerous, owing to the chances of a ricochet from the rearmost range striking a firer on the advanced range.

8. The lateral distance required between gallery ranges provided with penetrable targets is regulated by the necessity of providing for the safety of the firers, when firing is proceeding simultaneously at a long distance on one range and a short distance on the other.

9. As it will seldom be required to use adjoining ranges at 100 yards and 600 yards simultaneously, it will usually suffice to site the ranges so that firing can take place at 500 yards on one range while the other is in use at 200 yards. In such circumstances a sufficient

DANGER AREAS OF ADJOINING RANGES

Fig. 1

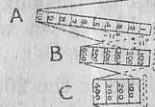


Fig. 2

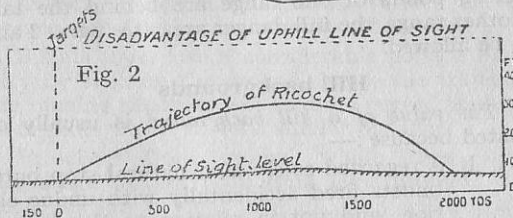


Fig. 3

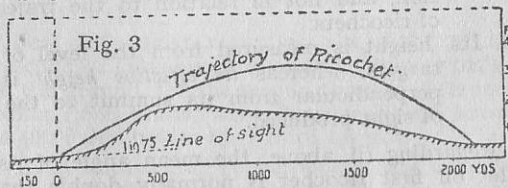
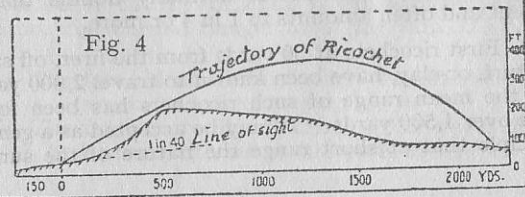


Fig. 4



margin will be obtained by fixing the 200-yards firing point of one range in such a position that a line drawn to it from the 500-yards firing point of the next range describes an angle of not less than 11 degrees with the line of fire of the latter (*see* Plate 1, Figure 4).

10. This rule only holds good so long as the 200-yards firing point is in front of the targets on the 500-yards range. In the case of deeply echeloned ranges where the firing points of one range are behind the targets of another range the full danger area (*see* para. 2 above) must be allowed.

Hill backgrounds

11. *The value of a hill background* is usually over-estimated because :—

- i. It is regarded solely as a natural stop butt for bullets fired accidentally with undue elevation, and not in relation to the trajectory of ricochets.
- ii. Its height is measured from the level of the targets, whereas *its effective height* is the perpendicular from its summit to the line of sight produced.

12. Regarding (i), above, the mean angle of rise of a bullet on first ricochet is normally double that of descent and often amounts to 1 in 4 or more.

13. First ricochets at 30 yards from the firer, off sand, dry turf, or clay, have been known to travel 2,000 yards, and the mean range of such ricochets has been found to be over 1,500 yards. It may be accepted as a general principle that at short range the nature of the surface

struck by the bullet exercises but little effect on the range of the ricochet.

14. The further the bullet travels before it strikes the ground the less does its range on ricochet tend to become. Nevertheless, it is on record that bullets striking the ground 400 yards from the muzzle of the rifle have travelled 1,700 yards. At 2,000 yards bullets ricochet less frequently than at shorter distances.

15. Impact on a hard, uneven surface increases divergence, but does not necessarily reduce range.

16. Bullets must lose a considerable portion of their velocity by striking the ground, hence the trajectories of long ranging ricochets will be more curved than those of direct shots which travel a similar distance.

17. Ricochets from ground which rises slightly usually range further than from level ground. If, in addition, the line of sight is uphill, they will travel still greater distances.

18. Few data exist regarding the flight of bullets after second or subsequent ricochets. Shots which have struck the ground, for the second time, at distances not exceeding 1,500 yards, have, however, been known to travel 400 yards before their third impact.

19. Even with a hill background rising as much as 200 feet above the line of sight, it will only be possible to reduce the normal danger area (*see* para. 2 above) if :—

- i. The face of the hill is nearly vertical, and the targets are placed to its foot, or
- ii. The targets are placed about 1,600 yards from the foot of the slope (*see* para. 23 below).

20. If one or other of these two conditions is not fulfilled the normal danger area should be provided unless the hill rises 400 feet above the line of sight.

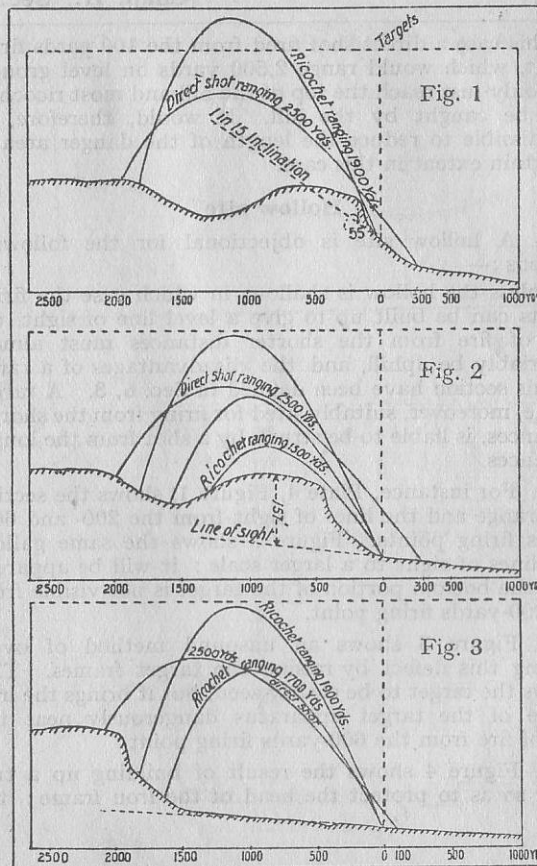
21. Plate 3, Figures 1, 2 and 3, show a typical form of hill background and the relative merits of different positions for siting the targets. In Figure 1, where the targets are sited half way up the slope, the hill background is a positive disadvantage owing to the fact that ricochets off the ground just in front of the targets may be expected to range over 2,000 yards; and also because, owing to the inclination of the line of sight, a badly aimed high shot which does not go very far above the targets has sufficient elevation to clear the hill and travel some 2,500 yards.

22. In Figure 2, where the targets are sited at the foot of the slope and the line of sight is nearly level, there is much less risk of a direct shot being fired at such an angle of elevation as to travel 2,500 yards, as the rifle would have to be deflected upwards through a considerably greater angle than would be the case on a range sited as shown in Figure 1. Moreover, owing to the comparatively level line of sight and therefore the greater angle through which a bullet must be deflected after striking the ground in order to travel far, long-ranging ricochets are less to be feared when the targets are sited as shown in Figure 2.

Even in this case, however, no additional safety is obtained from the hill background, as it will be seen from the diagram that any ricochets ranging 1,500 yards or over will clear the top of the hill.

23. The best position for the targets is shown in Figure 3, *i.e.*, 1,600 yards from the foot of the slope.

HILL BACKGROUND



In this case a direct shot fired from the 100 yards firing point, which would range 2,500 yards on level ground, will only just reach the top of the hill and most ricochets will be caught by the hill. It would, therefore, be permissible to reduce the length of the danger area to a certain extent in this case.

Hollow site

24. A hollow site is objectional for the following reasons :—

Unless the hollow is shallow, in which case the firing points can be built up to give a level line of sight, the line of fire from the shorter distances must almost invariably be uphill, and the disadvantages of a range of this section have been defined in Sec. 6, 3. A target frame, moreover, suitably sited for firing from the shorter distances, is liable to be struck by a shot from the longer distances.

25. For instance, Plate 4, Figure 1, shows the section of a range and the lines of sight from the 200- and 600-yards firing points. Figure 2 shows the same gallery and lines of sight to a larger scale; it will be apparent that the bottom portion of the target is not visible from the 200-yards firing point.

26. Figure 3 shows an unsound method of overcoming this defect by raising the target frames. This allows the target to be clearly seen, but it brings the iron frame of the target apparatus dangerously near the line of fire from the 600-yards firing point.

27. Figure 4 shows the result of building up a turf bank so as to protect the head of the iron frame; the

HOLLOW SITE

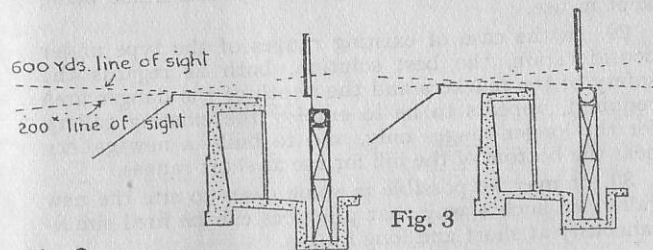
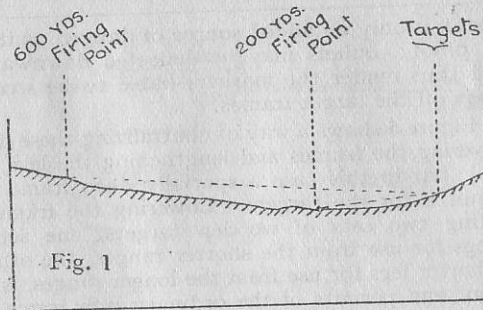


Fig. 2

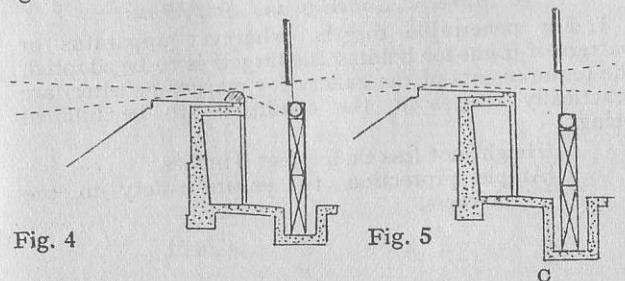


Fig. 4

Fig. 5

turf bank is only an added source of danger, as it is not bullet proof; bullets may be deflected downwards by it, and thus render the markers liable to be struck by splinters off the target frames.

28. Figure 5 shows a way of neutralizing these defects, by lowering the frames and lengthening the legs of the target; but in this case a specially deep frame would be required for the targets. Lowering the frames and providing two sets of wooden targets, one set with long legs for use from the shorter ranges, the other set with shorter legs for use from the longer ranges, is a fair solution, and permits of the ordinary iron frame being kept in use.

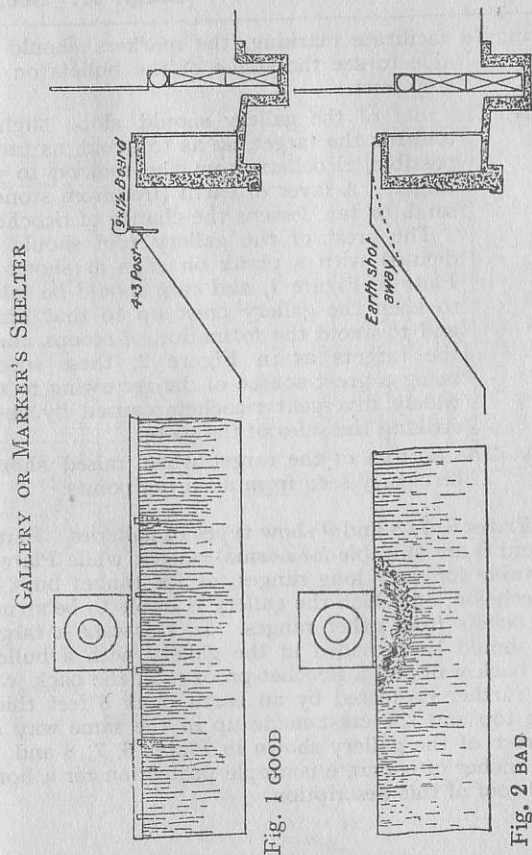
29. In the case of existing ranges of the type under consideration, the best solution, both as regards the safety of the markers and the depth of the danger area required, appears to be to employ the existing gallery for the longer ranges only, and to build a new gallery near the bottom of the hill for use at short ranges.

30. It may be possible in some cases to site the new gallery in such a way that practices can be fired simultaneously at short and long ranges.

8. Markers' Galleries and Stop Butts

i. For penetrable targets, whatever apparatus or pattern of frame for holding the targets is to be adopted, the requirements of the gallery (or marker's shelter) are practically the same, the conditions to be fulfilled being:—

- i. Height not less than 6 feet 6 inches.
- ii. Ample protection to ensure safety to the markers.



iii. To facilitate marking, the markers should be able to see the strike of the bullets on the stop butt.

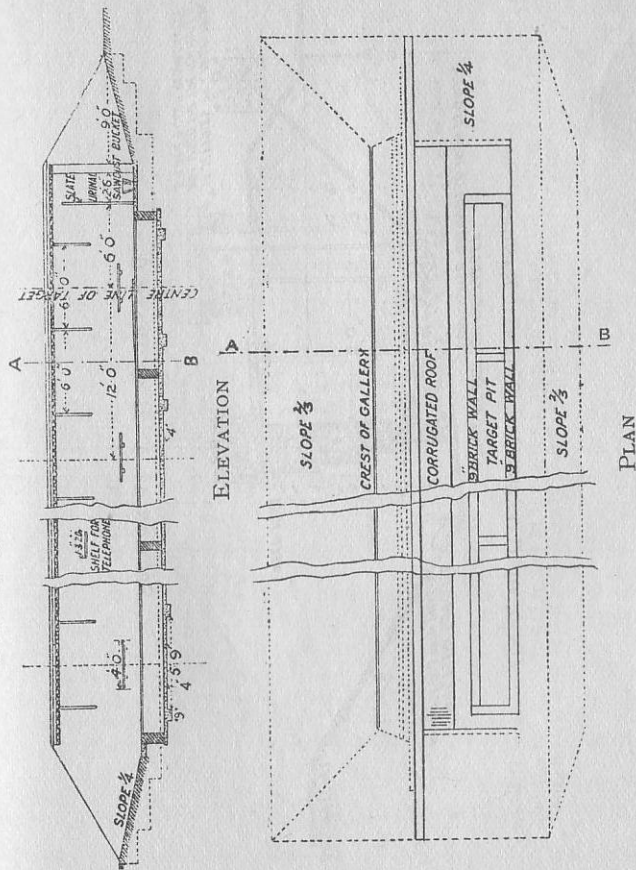
iv. The roof of the gallery should slope slightly towards the target, so as to avoid, as far as possible, ricochets from the roof on to the target. A layer of earth (free from stones), sand, or tan, lessens the chance of ricochets.

The crest of the gallery roof should be defined with a plank on edge as shown in Plate 5, Figure 1, and care should be taken to keep the gallery crest up to that limit, and to avoid the formation of scoops under the targets as in Figure 2, these scoops being a great source of danger owing to the widely divergent ricochets caused by shots striking the sides of the scoop.

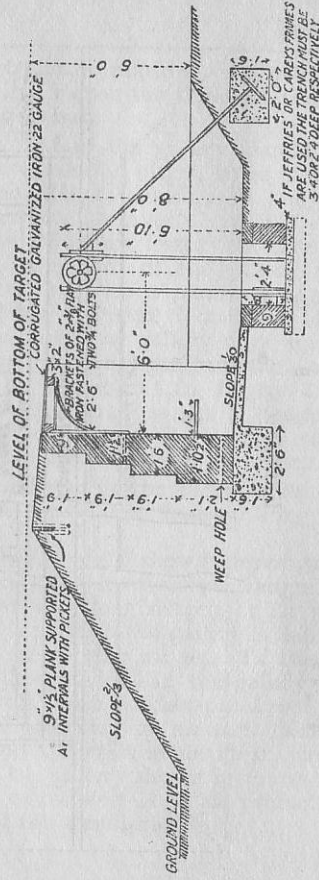
v. The bottom of the target when raised should be clearly seen from all firing points.

2. Plates 6, 7, 8 and 9 show types of galleries. Plates 6, 7 and 8 are suitable for normal ranges, while Plate 9 is suitable for very long ranges, or for ranges built in deep echelon, on which the gallery is liable to be struck by ricochets from other ranges. In this case a target store should be provided in the gallery with a bullet-proof back wall and a ricochet-proof roof, the back wall being further protected by an earth bank 3 feet thick at the top and the crest made up in the same way as the crest of the gallery shown in Plates 6, 7, 8 and 9. Three inches of concrete is ample protection for a horizontal roof of this description.

TYPE OF GALLERY FOR NORMAL RANGES

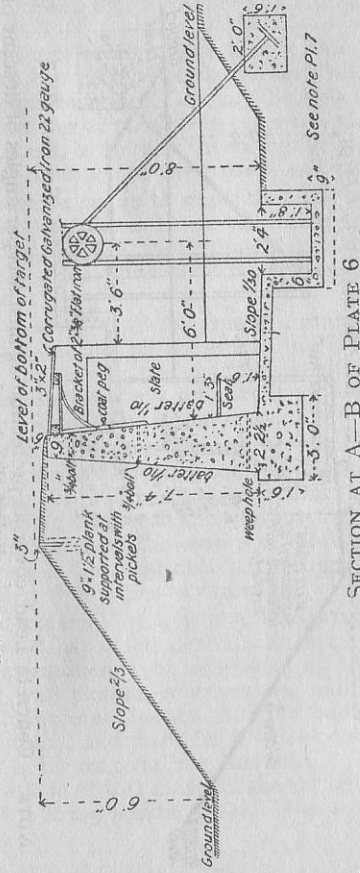


TYPE OF GALLERY FOR NORMAL RANGES



SECTION AT A-B OF PLATE 6

TYPE OF GALLERY FOR NORMAL RANGES



SECTION AT A—B OF PLATE 6

NOTE—If reinforced concrete is used, the thickness of the wall can be reduced to 6 inches at the top and 1 foot 6 inches at the bottom, and thickness of the footing to 12 inches. ¼-inch steel rods at 6-inch centres or B.R.C. fabric are suitable as reinforcement.

8. The entrance to a sunken gallery should be by a ramp and not by steps, the former being more convenient for removal of targets and stores.

9. As a general rule, some form of stop butt, natural or artificial, is required. A stop butt is essential in all cases where the danger area is less than that laid down for battle practice ranges. (See Sec. 21.) A stop butt which will show the strike of the bullets should be constructed unless there are special reasons for this not being done.

10. On certain sites a hillside may enable an artificial stop butt to be dispensed with. In such cases the ground in rear of the targets must rise to an angle of not less than 30 degrees to the general level of the firing points.

11. If the angle be less than 30 degrees the hillside should be scarped from a height of 2 feet above the targets to 1 foot below the lowest possible line of fire from the longest range firing point. (See Plate 10, Figure 4.)

12. In cases where an ample danger area is provided, this scarping is not absolutely necessary, and some form of bullet catcher (see Plate 10, Figure 5) on the face of the hillside may be substituted if economy would be gained thereby.

13. Stepping the hillside, though cheaper than scarping in one cut, is undesirable, as it tends to cause numerous and widely diverging ricochets.

14. It is permissible, however, if the nature of the ground is suitable and expense can be saved thereby, to form a butt partly by excavation and partly by

Fig. 1

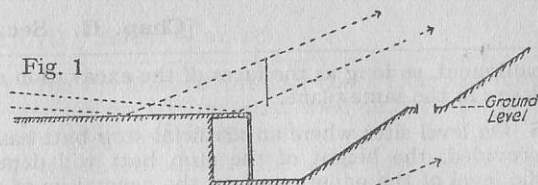


Fig. 2

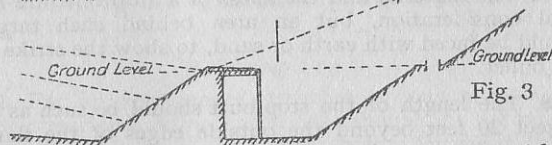
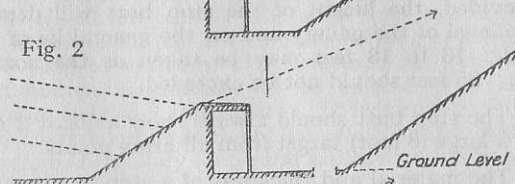


Fig. 3

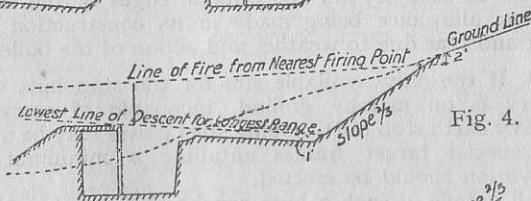


Fig. 4.

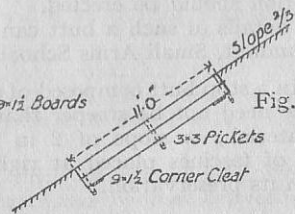
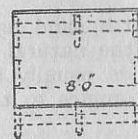


Fig. 5.

NOTE.—When possible the stop butt should be 90 feet from the targets.

embankment, so long as the faces of the excavation and bank are in the same plane.

15. On level sites where an artificial stop butt has to be provided, the height of the stop butt will depend on the level of the gallery and on the general lie of the ground; 16 to 18 feet may be taken as the normal height; 25 feet should not be exceeded.

16. The stop butt should always show at least 2 feet above a large (6 foot) target from all firing points.

17. The material and thickness of a stop butt are for local consideration, but an area behind each target should be faced with earth or sand, to show the strike of the bullet.

18. The length of the stop butt should be such as to project 20 feet beyond the outside edges of the flank targets, allowance being made in its construction for wear and tear due to weather and action of the bullets.

19. If the only available site for the stop butt and gallery is on marshy ground, incapable of carrying a heavy earth stop butt, sloping steel plates may be used and special target frames entailing a minimum of excavation should be erected.

Full details of such a butt can be obtained from the Commandant, Small Arms School.

20. In a stop butt composed of earth, sand, or shingle, the face need not be steeper than the natural slope of the material; a slope of 2 in 3 is usually suitable. Layers of fascines placed at right angles to the slope assist in its preservation.

21. The distance of the stop butt from the targets will depend on the material used in its construction and on the slope of the ground.

22. Whenever possible the stop butt should be 90 feet from the targets and the intervening space should be levelled, to enable revolver practices and preliminary light automatic practices to be carried out between the stop butt and the gallery. If formed of shingle or hard material it should not be placed nearer than 90 feet from the gallery, and sand bullet catchers as shown in Plate 10, Figure 5, should be provided behind every target.

9. Firing Points

1. For all new ranges, trenches or pits adapted to the prescribed firing positions should be provided immediately in front of the firing points for use in those practices which are performed from behind cover. (See Annual Courses, Vol. IV.)

2. The firing points should be *on the ground level* if possible. Raised platforms are not to be provided except in the case of hollow or swampy sites or where the targets are not visible without them. In cases where they are required the width at the top should not be less than 9 feet.

3. When an artificial stop butt has to be provided it may be a question whether it will be more economical to build up the firing points or increase the height of the stop butts.

4. The length of the firing points should correspond with the number of targets and distance between them.

5. Each firing point must be accurately measured from the target and indicated by a picket with the range painted on it, pegs with the numbers of the targets being fixed on the firing points at intervals corresponding with the distance between the targets.

10. Target Frames

1. On small ranges of only one or two targets, temporary ranges or where lateral space is ample, windmill target frames may be employed. These target frames are cheap and easily worked. They are not, however, suitable on ordinary ranges owing to the extra width required.

2. Under normal conditions the distance from centre to centre of target frames should be 12 feet.

3. The most suitable target frame for normal sites is shown in Plate 70. The following points should be noted in erecting these frames:—

- i. Complete the side and end walls of the target pit and prepare the bottom of the pit to receive the concrete floor.
- ii. Bed 4 inch by 3 inch deal distance pieces, well tarred, as shown in the plates, with their upper surfaces $\frac{1}{2}$ inch above the finished level of the floor. Holes must be left at each end of the distance pieces to receive the T-iron uprights.
- iii. Erect the frame, care being taken to keep it perfectly plumb and square. Then fill in the concrete round the foot of the uprights and windstays.

iv. Targets for these frames should be made of 3 inch by 2 inch scantling.

v. The friction wheels and main axles should always be kept well oiled.

11. Distinguishing Marks and Flagstaffs

1. Ranges should be lettered and targets numbered from the left (looking from the firing point).

2. Numbers should be made of wood and placed on the stop butt in such a position that from the firing point each number appears directly above its target.

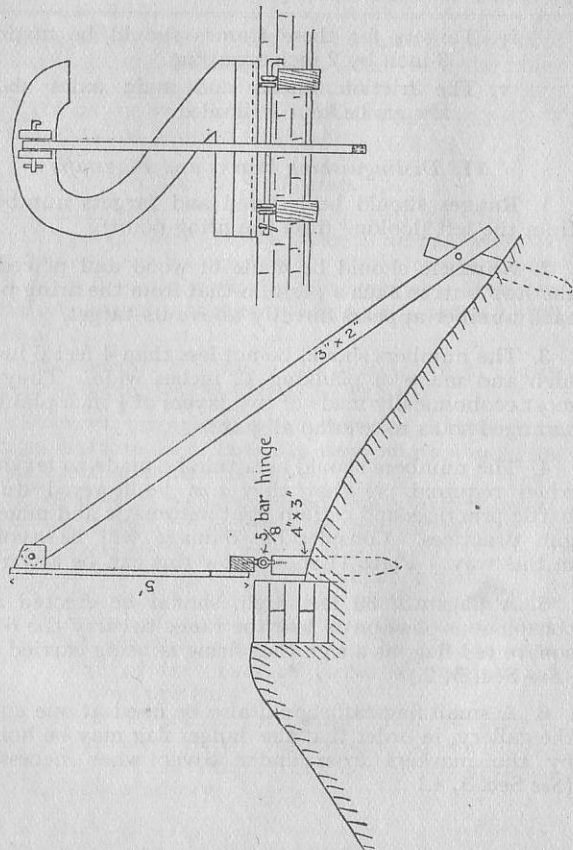
3. The numbers should be not less than 4 feet 6 inches high and made of planking 12 inches wide. They are most economically made of two layers of $\frac{1}{2}$ inch planking arranged so as to overlap all joints.

4. The numbers should as a rule be made to let down when required, so that they can be lowered during battle practices and certain light automatic and machine gun practices. Considerable damage will be avoided in this way. Plate 11 shows how this can be arranged.

5. A flagstaff, 30 feet high, should be erected in a conspicuous place on or near the range to carry the 6 feet square red flag, as a sign that firing is being carried out. (See Sec. 5, 2.)

6. A small flagstaff should also be fixed at one end of the gallery, in order that the danger flag may be hoisted by the markers from under cover when necessary. (See Sec. 5, 4.)

HINGED NUMBERS ON STOP BUTT



12. Workshops and Stores

1. A workshop will usually be required for the manufacture and repair of targets. A corrugated iron building as shown in Plates 12 and 13 is suitable for a classification range of 16 targets.

2. A target store will generally be built as a continuation of the markers' gallery. A lean-to shed with back and end walls of concrete and a corrugated iron roof will usually suffice. The size will depend on the number of targets to be stored.

13. Telephones

1. To obtain full advantage of the gallery system, permanent telephone communication is essential between the gallery and the firing points.

2. The telephone circuits should in all cases be metallic circuits, and should as a rule be of 2-core lead covered and armoured cable (cable electric B.2/40) buried at a depth of not less than eighteen inches.

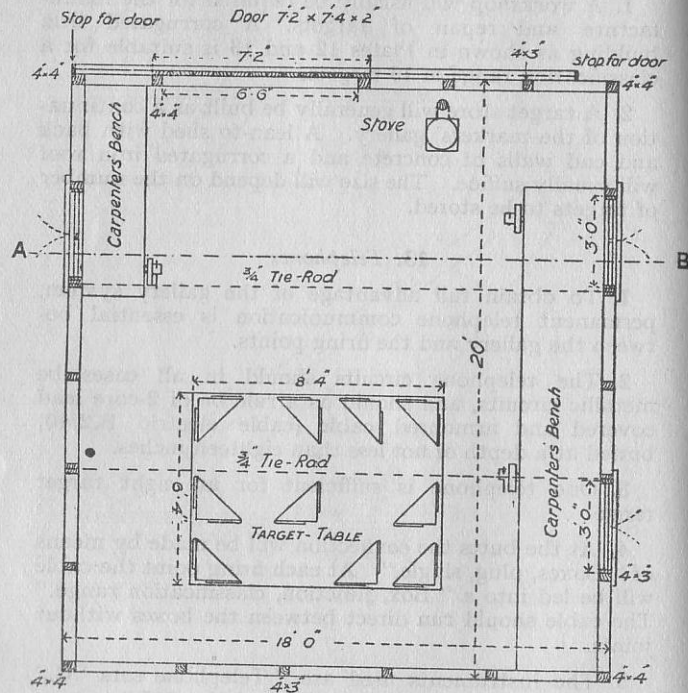
3. One telephone is sufficient for an eight target range.

4. At the butts the connection will be made by means of "Boxes, plug, single." At each firing point the cable will be led into a "Box, junction, classification range." The cable should run direct between the boxes without joints.

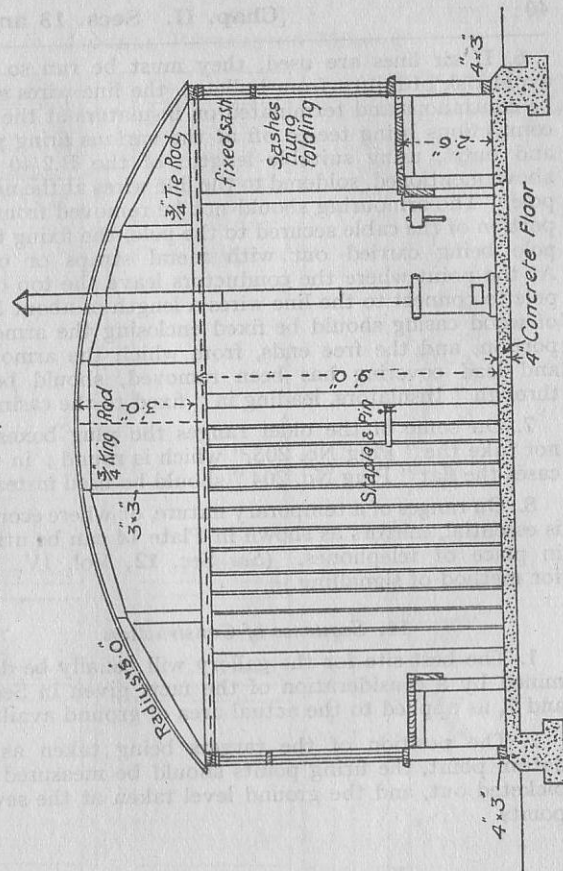
5. The instruments used are "Telephone sets 'C.,' No. 100," or "No. 110," with "Plugs No. 205" to connect them to the boxes.

CORRUGATED IRON WORKSHOP

(Plan)



CORRUGATED IRON WORKSHOP
SECTION AB (PLATE 12)



6. If air lines are used, they must be run so as to avoid risk of injury from bullets; the line wires should be continuous and terminated on insulators at the ends, connections being tee-ed off at the various firing points and butts, using suitable lengths of the B.2/40 cable above mentioned, soldered to the line wires at the nearest pole. The armouring should not be removed from that portion of the cable secured to the pole, the fixing to the pole being carried out with metal straps or cleats. At the point where the conductors leave the top of the pole to connect to the line wires a length of about 3 feet of wood casing should be fixed enclosing the armoured portion, and the free ends, from which the armouring and lead covering has been removed, should be led through "Insulators, leading in" fixed to the casing.

7. On some of the older ranges the plug boxes will not take the "Plug No. 205," which is round; in these cases the flat "Plug No. 204" should be used instead.

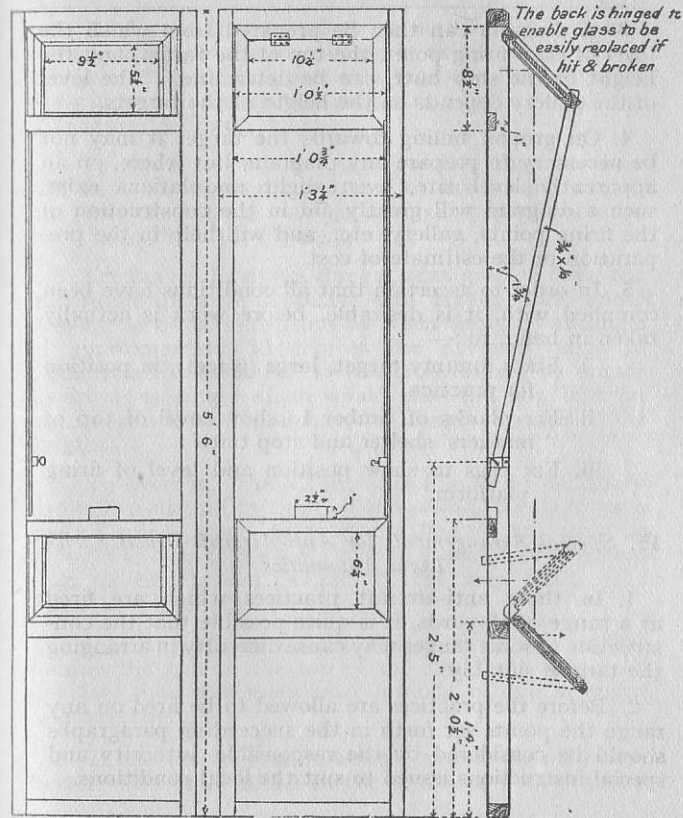
8. On ranges of a temporary nature, or where economy is essential, mirrors as shown in Plate 14 can be utilized in place of telephones. (See Sec. 12, Vol. IV, 1931, for method of signalling.)

14. Sequence of Construction

1. The best site for the gallery will usually be determined by a consideration of the facts given in Secs. 6 and 7, as applied to the actual area of ground available.

2. The position of the targets being taken as the datum point, the firing points should be measured and picketed out, and the ground level taken at the several points.

DOUBLE REFLECTING MIRROR



3. A diagram can then be prepared from which the level of each firing point, the top of the target, and the height of the stop butt, can be determined; the level of the gallery depends on the height of the targets.

4. On ground falling towards the target it may not be necessary to prepare any diagram, but where, on an apparently level site, even slight undulations exist, such a diagram will greatly aid in the construction of the firing points, gallery, etc., and will help in the preparation of the estimate of cost.

5. In order to ascertain that all conditions have been complied with, it is desirable, before work is actually taken in hand, to :—

- i. Fix a dummy target, large (6 feet), in position for practice.
- ii. Fix planks of timber to show level of top of markers' shelter and stop butt.
- iii. Fix pegs to show position and level of firing platform.

15. *Special Arrangements for Anti-Aircraft Practice with Light Automatics*

1. In those anti-aircraft practices which are fired at a range of 10 yards, it is quite possible that the construction of some ranges may cause difficulty in arranging the targets suitably.

2. Before the practices are allowed to be fired on any range the points set forth in the succeeding paragraphs should be considered by the responsible authority and special instructions issued to suit the local conditions.

3. When the targets are to be used in the ordinary frames, if the markers' gallery is raised much above the ground level it is probable that the firer's line of fire will be blocked by the bank of the marker's gallery. (See Plate 15, Figure 1.)

4. In other cases it is quite possible that the firer will have an uninterrupted line of fire to the target, but that the bullets may go over the top of the stop butt, as in Plate 15, Figure 2.

5. On ranges having a danger area greater than the maximum distance a bullet will travel, this would present no objections; but as when firing at an angle of approximately 30 degrees the extreme range of 3,500 yards is obtained, it would obviously be unsafe to fire at an angle which would miss the stop butt on ranges which did not have a danger area of that length.

6. To overcome these difficulties it may be necessary to build a mound in front of the marker's gallery as a special firing point, so that the line of fire may be brought as near to the horizontal as is necessary to ensure that all bullets are caught by the stop butt. (See Plate 15, Figure 3.)

7. The angle between the line of fire and the line joining the gun to the top of the stop butt should be not less than 8 degrees (*i.e.*, a slope of one in seven approximately).

8. If the above considerations present no difficulty, better value is obtained in the practices if the targets

ARRANGEMENTS FOR A.A. TARGETS

Fig. 1

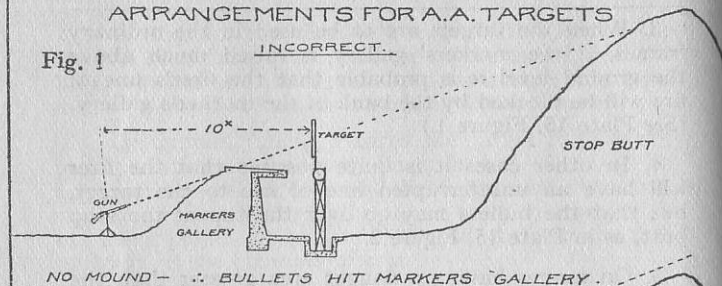


Fig. 2

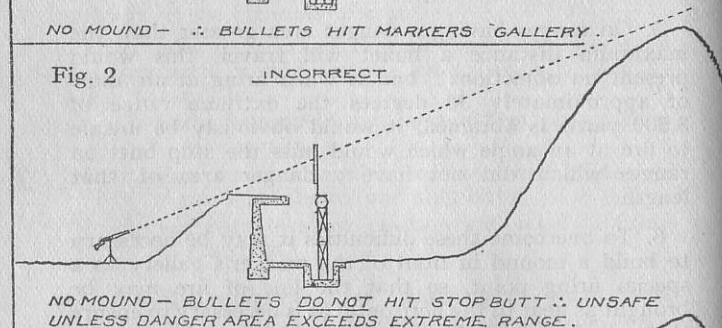
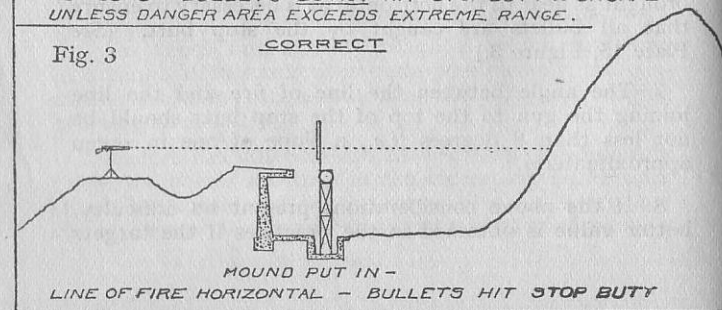


Fig. 3



can be placed at an angle of about 45 degrees above the horizontal line of fire.

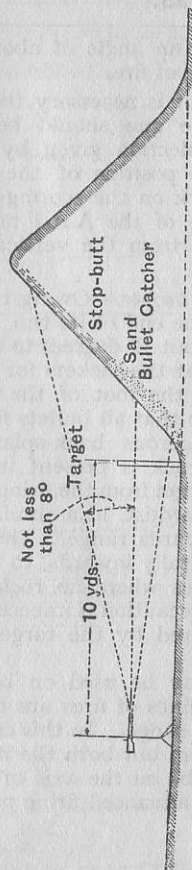
9. In all cases it is necessary that the distance from the target to the gun should be absolutely correct, otherwise the deflection given by the sights will not coincide with the position of the centre of the group given by the mark on the scoring card or by the template in the case of the A.A.I target. This distance will be measured from the vertical pillar of the anti-aircraft mounting.

10. *Position of targets.*—Owing to the fact that when the target is at the end of its run, firing is taking place at an angle of about 12 degrees to the axis of the range, it is necessary that the sockets for this target be placed right up against the foot of the stop butt (Plate 16) in order to ensure that all bullets fired will hit the butt. To prevent dangerous back-splash on those ranges where stone or rock is present in the butt, the area covered by the target from the firing point will be covered with sand and sawdust, in a similar way to the bullet-catcher of a 30-yards range. The depth of the sand, measured horizontally inwards, to be 3 feet.

On those ranges where no rock or stone is present in the butt this precaution is unnecessary, but the surface of the butt covered by the target must be kept well raked and soft.

This target may be used on battle practice ranges where the flank lines of fires are more than 12 degrees to the axis of the range. In this case the target may be placed in the open, but both the firer and the centre of the target must be on the axis of the range and never beyond the most advanced firing position.

ANTI-AIRCRAFT PRACTICES—MOVING TARGET
RELATIVE POSITIONS OF GUN, TARGET AND STOP BUTT



16. Special Arrangements for Vickers Machine-gun and Light Automatic Practices

1. The preliminary practices for both the Vickers machine gun and light automatics are fired at targets at 25-yards range. These practices are best carried out either on a 30-yards range or against the stop butt on a classification range.

2. When fired on a 30-yards range the special safety precautions laid down in Sec. 8, Vol. IV, 1931, and in Sec. 18 of this volume must be strictly adhered to.

3. When fired against the stop butt of a classification range it is best to construct a continuous socket way as described in Sec. 51, 6, and shown in Plate 117. The target frames are placed in this socket way at the bottom of the stop butt.

4. The minimum distance between gun positions should be 5 yards. An interval of at least 10 yards should be left between each group of four guns.

5. The targets should not be placed against the face of the markers' gallery as the concentrated fire of machine guns or light automatics at this short range is liable to penetrate the gallery after a short time.

6. In the case of the instructional and classification practices carried out at the longer ranges the targets are sometimes placed in the ordinary target frames, but in a very large number of practices they are placed on the stop butt. In these latter practices it is most important that good observation of fire should be obtained. A vertical distance of 2 feet of stop butt above and below the target should be visible from all the firing

positions. The surface of the stop butt should be such as will give a fair observation of the strike of the bullets.

7. For ranging practices with light automatics, steel plates are placed on the stop butt. For the Vickers machine gun observation practices a rectangular frame about 6 feet square let into the stop butt and filled with a layer of ashes should be used (*see* Sec. 16, 13, Vol. IV, 1931).

8. For traversing practices sockets should be let into the stop butt to take the legs of the targets, and when possible to do so, it is a great advantage if a 4-foot berm is constructed along the face of the stop butt at the level of these sockets, to facilitate marking.

9. Steps should be arranged leading to the berm from the markers' gallery in the centre of each set of two targets.

11. On ranges where the stop butt is a considerable distance behind the gallery (rifle) target frames, and the machine-gun or light automatic range is therefore increased perhaps as much as 50 yards, it may be advisable, if the ground permits, to advance from the normal firing points and stake the corrected machine gun or light automatic firing points.

If this plan is not feasible, the correction of range necessary to hit the targets erected on the stop butts should be included in local range standing orders.

CHAPTER III

30-YARDS RANGES

17. *Construction and Selection of Sites*

1. These ranges are suited to all situations and to all classes of range practices, and should be constructed at all stations where there are sufficient troops to justify the expenditure.

Detailed drawings can be issued on application to the Commandant, Small Arms School.

2. In the case of large garrisons it may be found necessary to establish one or more ranges for general use, but it is desirable that each regular unit should possess its own 30-yards range when possible.

3. The procedure as regards the provision of sites for 30-yards ranges will be generally similar to that laid down in Sec. 3 for classification ranges.

4. When possible, however, there should be a space for a portable bayonet assault course (80 to 100 yards) to adjoin the range behind the firing point.

5. Due consideration must be given to the noise caused by the firing. This is considerably greater on

a 30-yards range than on an open range owing to the sound being thrown back by the wall.

For this reason such a range should not be sited, if it can be avoided, within 400 yards of private residential houses, hospitals, or other buildings of a similar nature from which complaints of nuisance caused by the noise of firing might arise.

6. It should be noted that, as the sound is thrown back by the wall, greater discomfort from the noise is caused to occupants of buildings behind the firing point than to those living in continuation of the line of fire. Therefore a site for a 30-yards range should afford a maximum of accessibility with a minimum of nuisance from the noise of firing.

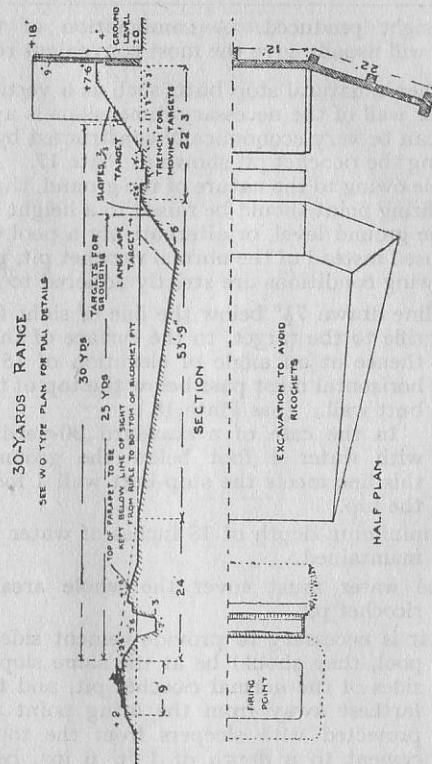
7. If compatible with other considerations, the direction of the line of fire should be so arranged that the sun will not be in the eyes of the firer at the time when firing usually takes place.

8. The 30-yards range (see Plate 17) gives protection against all shots fired within the following limits: vertical deviation, $8\frac{1}{2}$ degrees up and $7\frac{1}{2}$ degrees down; lateral deviation 15 degrees to either side.

This protection is considerably greater than that afforded by the normal danger area on a classification range.

9. The degree of safety is, however, only obtained if the line of sight is horizontal or slightly downhill.

10. If it is impossible to avoid an uphill line of sight, the firing point must either be raised, or the wall must be raised to get the same vertical height above the



line of sight produced. A combination of the two methods will usually give the most convenient results.

11. When a natural stop butt, such as a vertical cliff, quarry, or wall of the necessary dimensions is available, a range can be very economically constructed by simply excavating the ricochet pit shown in Plate 17. If this is impossible owing to the nature of the ground, the targets and the firing point should be raised to a height of 6 feet above the ground level, or alternatively a pool of water may be used instead of the normal ricochet pit, provided the following conditions are strictly adhered to:—

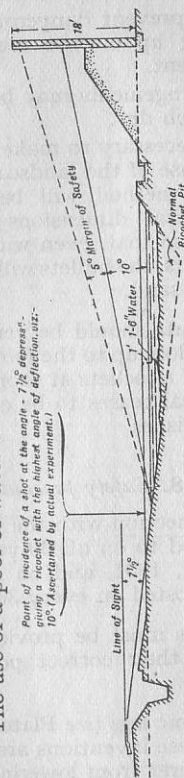
- i. A line drawn $7\frac{1}{2}^\circ$ below the line of sight from the rifle to the target, to the surface of the water, thence at an angle of elevation of 15° to the horizontal must pass below the top of the stop-butt wall. (See Plate 18.)

In the case of a standard 30-yards range, with water 1 foot below the ground level, this line meets the stop-butt wall 1 foot below the top.

- ii. A minimum depth of 18 inches of water must be maintained.
- iii. The water must cover the whole area of the ricochet pit.
- iv. If it is necessary to provide cement sides to the pool, they should be at the same slope as the sides of the normal ricochet pit, and that side farthest away from the firing point must be protected with sleepers from the top of the cement to a depth of 1 ft. 6 ins. below the surface of the pool. This precaution is neces-

30-YARDS RANGE

The use of a pool of water in lieu of the Normal Ricochet Pit



sary to prevent dangerous splash from bullets breaking up on the cement, and to protect the cement.

- v. Special arrangements may be required for keeping the trench dry.
- vi. It will be necessary to make special arrangements for the use of the landscape target. The most suitable method will be to increase slightly the general dimensions of the sand bullet catcher, so that, even with the higher siting of the targets, the bullets will still strike a sufficient depth of sand.

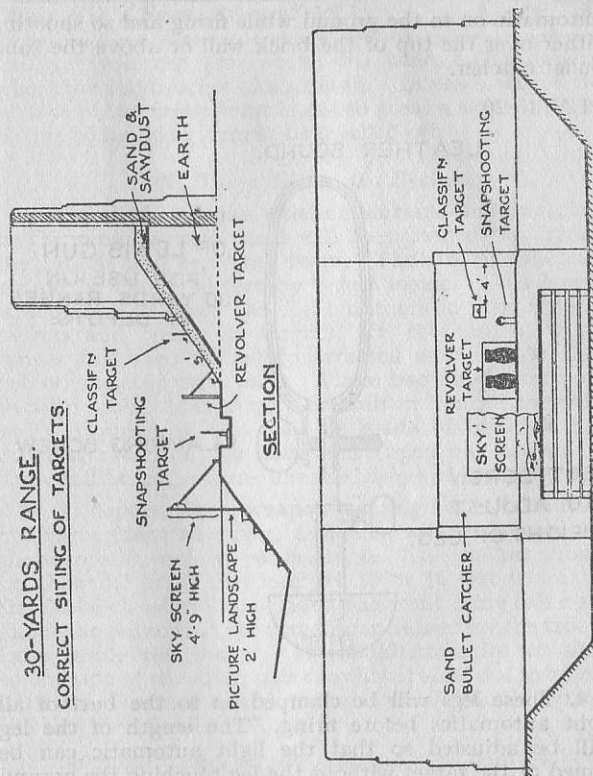
12. The stop butt should be vertical and the targets should be placed close up to the foot of the butt, as owing to the steep rise of ricochets at short ranges, a cliff which is not quite vertical ceases to be effective in proportion as the slope diminishes.

18. Safety precautions

1. Rules in connection with the special safety precautions to be adhered to on all 30-yards ranges are given in Sec. 8, Vol. IV, 1931, and on A.F. B 68, a copy of which should be posted on every 30-yards range.

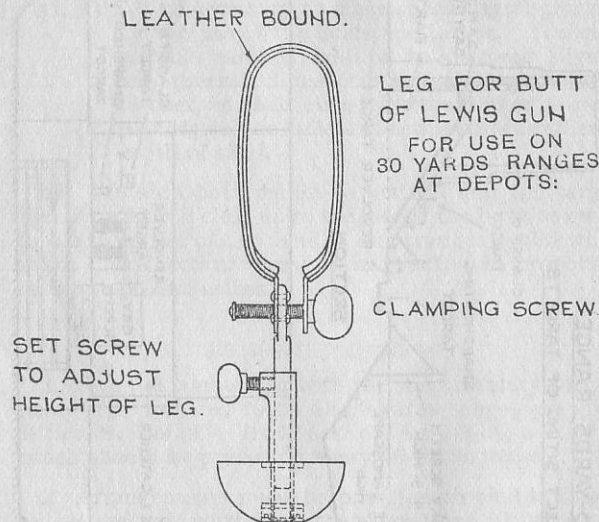
2. Arrangements must be provided to enable targets to be erected in their correct positions as shown in Plate 19.

3. Small telescopic legs (*see* Plate 20) have been issued to all depots. These inventions are designed to prevent an inexperienced firer from lowering the butt of a light



automatic on to the ground while firing and so shooting either over the top of the brick wall or above the sand bullet catcher.

PLATE 20



4. These legs will be clamped on to the butt of all light automatics before firing. The length of the leg will be adjusted so that the light automatic can be aimed at the target without the leg touching the ground

and yet will not aim above the sand bullet catcher when the leg touches the ground. In cases where the surface of the firing point is at too great a slope to allow of this being done it must be levelled off.

19. Target Stores and Shelters

1. Unless there is an existing suitable building close to the range a small shed will be provided for storing the targets and repairing them. The size of this shed should be about 10 feet by 6 feet inside. This length is required to store the light automatic instructional targets and landscape targets. In the case of single ranges this shed is best constructed as a lean-to shed behind the stop butt wall. Where two ranges are built back to back, the shed may be built in front of the wing wall. It must in this case be made of brick with a concrete roof and the door must open out towards a flank and be in the same line as the end of the wing wall.

2. At depots, where weapon training has to be carried out throughout the year, a shelter will be erected for the troops at each 30-yards range. This shelter should be about 20 or 30 feet long by 10 or 15 feet wide. It should be closed on three sides, the front being left open and arranged so that the targets can be seen by the troops from inside the shelter. It should normally be sited to one side of the firing point so that it shall not interfere with the bayonet assault course, which should adjoin the range. (See Sec. 17, 4.)

3. 30-yards ranges for rifle clubs and secondary schools will be dealt with as laid down for miniature cartridge ranges in Sec. 26, 8 to 16, except that the report will

be made on A.F. K 1309, and the certificate of safety will be conveyed by means of A.F. K 1314, the heading of which will be amended to read "Safety of a 30-yards rifle range," and sub-para. 4 and 5 of which will be amended to read :—

"Particular attention is drawn to the safety precautions laid down in Secs. 3, 9 and 11 ; 8, 6 and 10, 2, Vol. IV, 1931, and to the special conditions in the report above mentioned."

CHAPTER IV

BATTLE PRACTICE RANGES

20. *General Considerations*

1. A large number of individual or section battle practices can be carried out on the ordinary classification range. A battle practice area should, however, be provided when possible for the above practices, and be so designed as to enable complete sections to be trained in simple tactical exercises.

2. Ground to be suitable for battle practice should possess a variety of natural features.

3. Better instruction can be obtained on slightly undulating ground (on which there is, moreover, considerably less risk of the occurrence of widely divergent or long ranging ricochets) than on ground with more

pronounced characteristics. It is easy to find concealment behind well-marked features, but to develop the power to take full advantage of slight undulations demands constant practice.

4. The deduction is that the best site for a battle practice range is on ground generally open and level, but possessing some intersections and slight undulations of surface.

5. Marshy sites are unsuitable ; on rocky ground there is danger of erratic ricochets and splinters, etc. ; in thickly-wooded country the view is impeded, and expense must be incurred in clearing.

21. *Danger Areas for Battle Practice and Tank Ranges*

1. The danger area required for a battle practice range must be considerably larger than that of a classification range for the following reasons :—

- i. There is no stop butt, and consequently nearly every bullet fired will ricochet.
- ii. The line of fire is not always parallel to the axis of the range.
- iii. The targets appear at the ground level and this tends to produce ricochets, especially at short ranges.

2. Thus it will be understood that for a battle practice area on which complete latitude as to the direction of fire can be allowed, a large area of country is required. For an efficient battle practice area a tract of country at least 4,400 yards in diameter is necessary.

3. With such an area, on suitable ground, a large number of battle practice ranges, capable of being used simultaneously, could be sited radially round the circumference, using the centre as a common danger area. This would enable units to have a continual change of ground and, by closing two or three adjacent ranges, larger bodies of troops could be exercised.

4. It will seldom be possible to obtain such an area in the British Isles. In ordinary circumstances the largest body of troops to be exercised will be a platoon occupying a frontage of some 150 to 300 yards.

5. When the ground and other circumstances admit, it is advisable, for practices of this nature, to obtain for the range and its danger area a sector of a circle of 3,500 yards radius and 90 degrees included angle.

6. A range 600 yards long and 80 yards wide enables a section to be exercised at a time in the elementary practices.

7. The minimum danger area for such a range is shown on Plate 21.

8. The depth on normal level ground should be at least 2,500 yards from the most advanced firing position. If, however, the ground is undulating or hilly, so that the line of fire is at times upwards, a depth of 3,000 yards should be arranged.

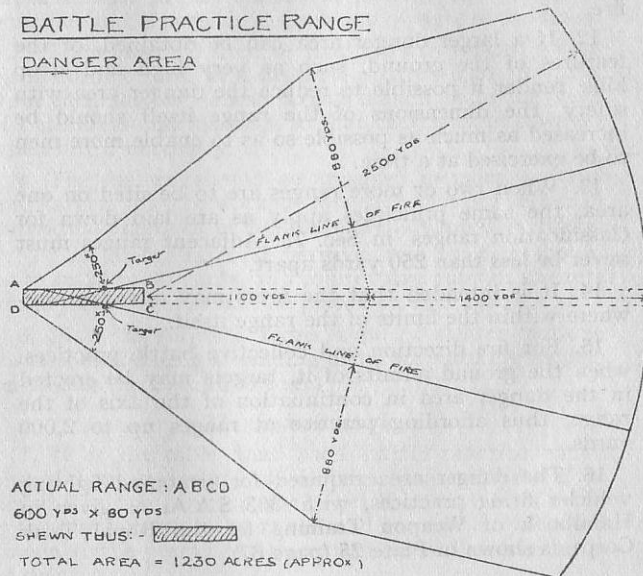
9. The minimum width required is 250 yards on the outer side of the flank lines of fire at the nearest targets and 880 yards on the outer side of these flank lines of fire at 1,100 to 2,500 yards beyond the end of the range.

10. In order that the flank lines of fire shall not be too divergent, the troops firing must not move outside the 80 yards width of the range, neither must the targets

PLATE 21

BATTLE PRACTICE RANGE

DANGER AREA



be placed outside the width. In addition, firers will not be allowed to fire obliquely at targets on the flanks at distances under 300 yards.

11. Plate 21 shows that a very large danger area is required for even such a small battle practice range as one measuring only 600 yards by 80 yards. It also shows the very small angle at which it is possible to fire diagonally to show the effect of crossing and oblique fire.

12. If a larger danger area can be obtained, or the features of the ground, such as very high and steep hills, render it possible to reduce the danger area with safety, the dimensions of the range itself should be increased as much as possible so as to enable more men to be exercised at a time.

13. When two or more ranges are to be sited on one area, the same principles apply as are laid down for classification ranges in Sec. 7. Adjacent ranges must never be less than 250 yards apart.

14. It is intended that the firers may advance anywhere within the limits of the range itself.

15. For fire direction and collective battle practices, when the ground admits of it, targets may be erected in the danger area in continuation of the axis of the range, thus affording practice at ranges up to 2,000 yards.

16. The danger area required for armoured fighting vehicles firing practices, with 303 S.A.A., as given in Handbook of Weapon Training for the Royal Tank Corps, is shown in Plate 25 (page 67).

22. Construction

1. Stop butts and galleries are not required. It will merely be necessary to provide shelters for markers,

target stores, workshops, and, if necessary, accommodation for range wardens.

2. Shelters for markers on battle practice ranges should be large enough to accommodate two men sitting (*see* Plate 22); they should be built in inconspicuous positions and, if possible, entirely out of sight of the firers.

3. They must be sited so that the targets can be set up in front of and at a distance of from 5 to 10 yards from each shelter; these targets should be in full view of both firers and markers, so that they may be lowered when hit, if necessary.

4. The shelters should be arranged in pairs, so that four targets may be worked from each pair of shelters in individual practices, or eight in more advanced exercises.

5. The lateral interval between two shelters should be from 20 to 60 yards, and four or five pairs of shelters at varying ranges should be placed on each range.

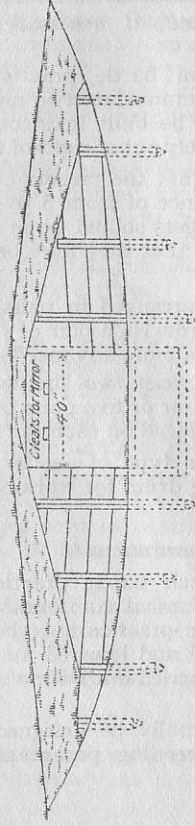
6. Plate 23 shows a larger type of shelter suitable for accommodating a winding drum for working targets on trollies (*see* Sec. 46, 6 to 8.)

23. Communication

1. It is desirable that each battle practice range should have a system of electrical communication, in order that the director of the practice may be able to cause the targets to be raised and lowered at will, and to enable the practice to be carried out with a minimum of delay.

2. The system should normally be designed on the lines laid down in the succeeding paragraphs. (*See* Plate 24.)

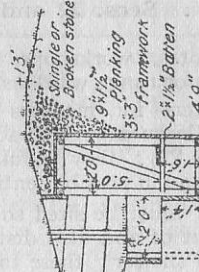
SHELTER FOR MARKERS—BATTLE PRACTICES



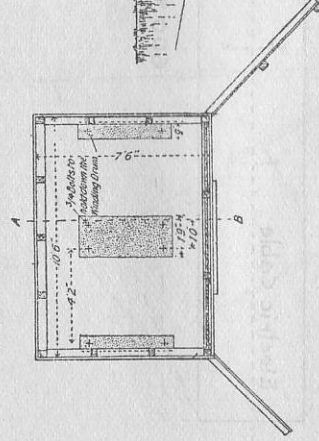
Bound for Targets

Ground Level +0.

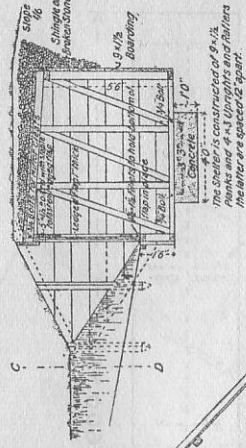
CLEATS FOR MIRROR



SHELTER FOR MEN WORKING THE DRUM. (See Sec. 48, 8.)

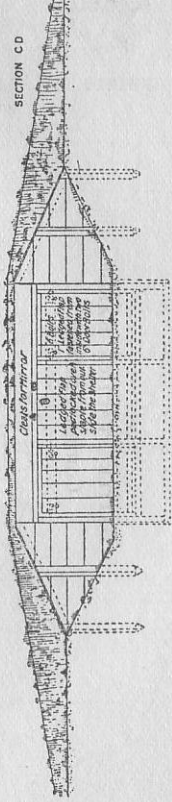


SECTION A B

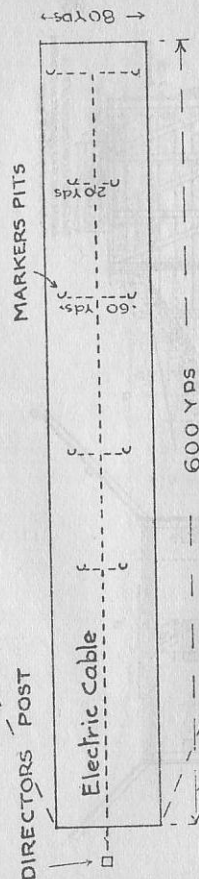


Planking of 3 1/2" x 4" x 2" and 1 1/2" x 4" x 2" are spaced 12" apart.

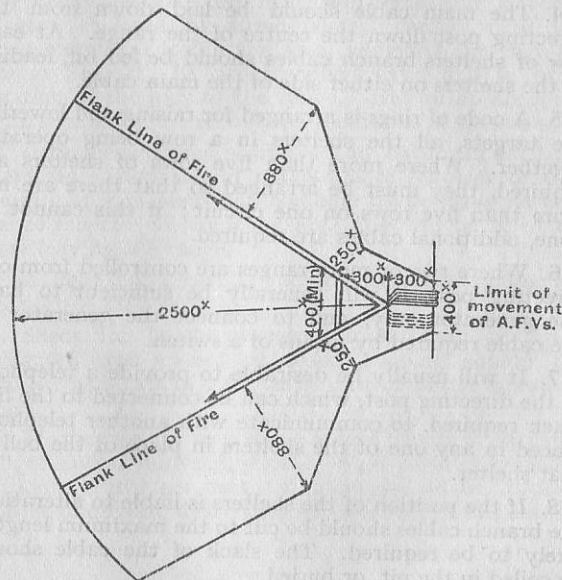
SECTION C D



BATTLE PRACTICE RANGE
Communications



DANGER AREA REQUIRED FOR A.F.Vs. FIRING
303-IN. AMMUNITION



3. A bell operated by a generator from the directing post, behind the longest range firing position, is required in each shelter to control the raising and lowering of the targets. For the normal range a single circuit with all the bells connected in parallel will suffice.

4. The main cable should be laid down from the directing post down the centre of the range. At each row of shelters branch cables should be led off, leading to the shelters on either side of the main cable.

5. A code of rings is arranged for raising and lowering the targets, all the shelters in a row being operated together. Where more than five rows of shelters are required, they must be arranged so that there are not more than five rows on one circuit; if this cannot be done, additional cables are required.

6. Where two or more ranges are controlled from one directing post, it will generally be sufficient to have one generator only, and to connect the generator to the cable required by means of a switch.

7. It will usually be desirable to provide a telephone at the directing post, which can be connected to the line when required, to communicate with another telephone placed in any one of the shelters in place of the bell in that shelter.

8. If the position of the shelters is liable to alteration, the branch cables should be cut to the maximum lengths likely to be required. The slack of the cable should be coiled in the pit, or buried.

9. The stores required for a typical battle practice range with eleven shelters are given in Appendix III.

24. General.

1. Each battle practice range should be clearly marked out by four posts, one on each side of the longest range firing position and one on each side of the shortest range firing position. No firing will be allowed outside the area enclosed by these posts. Targets may be placed anywhere inside the area, provided the regulations in Sec. 21, 10, are complied with, and in prolongation of the axis of the range. But on no account are targets to be placed outside the flanks of the area.

2. Permanent firing positions and cover should not be erected. Men should make use of features of the ground. If it is desired to combine battle firing with a defence scheme, all trenches, etc., dug will be filled in before leaving the range.

3. A light hand cart is required on each range for transport of targets.

4. Sheds for battle practice targets built of light corrugated iron sheets on wood framing should be provided at a rate of 1 for each pair of battle practice ranges.

5. Workshops for manufacture and repair of targets, built of similar material, should be provided at suitable positions. Fifty per cent. of spares should be stocked in order to obviate delay through shortage of targets.

CHAPTER V

MINIATURE CARTRIDGE RANGES (·22-IN. BORE)

25. *Uses of Miniature Ranges*

1. Miniature ranges are of the greatest importance in providing a convenient means of carrying out the preliminary part of weapon training.

2. Preliminary instruction can be given in any of the following subjects, provided the range is suitably fitted up :—

- i. Ordinary grouping practices.
- ii. Aiming off for wind (application), using wind-gauge to give effect of wind.
- iii. Snapshooting practices with timed exposure.
- iv. Shooting at moving targets.
- v. Firing in different positions.
- vi. Adaptation of firing positions to all forms of cover.
- vii. Training of eyesight.
- viii. Fire direction and fire control orders.
- ix. Distribution and concentration of fire.
- x. Description and recognition of different targets.
- xi. Selection of suitable targets for each small arms weapon.
- xii. Firing in respirators.
- xiii. Defence schemes to include all the above subjects.
- xiv. Use of field glasses.
- xv. Night firing (either at night or with dark glasses by day).

3. With an indoor range, properly lighted, all these subjects can be taught in the evenings and during wet weather.

4. A good miniature range therefore has a special value in the case of depots and T.A. units, where it is often difficult to arrange for training in these subjects under other conditions.

26. *Instructions for Inspection of Miniature Ranges*

Ranges for regular troops and T.A. units

1. G.Os.C.-in-C. are authorized to approve all miniature cartridge ranges constructed in accordance with the instructions given in this section.

2. When it is proposed to construct a new miniature cartridge range for regular troops or units of the Territorial Army, or to alter an existing one, the question will be submitted to the G.O.C.-in-C., with a report on Army Form K 1311, giving such information on the following points as may be required, with due regard to local conditions :—

For outdoor and indoor ranges :—

- i. Name and situation of range.
- ii. Detail of units to use the range.
- iii. Length of range (in yards).
- iv. Number of targets to be provided.
- v. The system of marking to be adopted.

For outdoor ranges only :—

- vi. If a danger area, over which it is proposed to obtain firing rights, is to be obtained, the nature of the soil and the length and breadth

of the area is to be given and it should be stated—

- (a) Whether the area is to be purchased or leased, or whether firing rights only are to be obtained. In the latter case, the proposal is not to be submitted until the written consent of the owners or occupiers of the land is secured.
- (b) What arrangements are proposed for preventing persons from entering the danger area while firing is in progress.
- (c) Whether the danger area is free from buildings, railways, roads, paths, etc.
- vii. The length, height, thickness and material of the stop butt.
- viii. A portion of a 6-in. ordnance map, showing the range, firing points, stop butt and danger area (if any), contoured to 25-ft. interval, will accompany the report, whether a danger area is proposed or not. The map will include all ground within 1,000 yards in rear of the butts and 100 yards outside the flank targets.

For indoor ranges only :—

- ix. A pencil sketch (or plan and section) of the range is to be attached, giving the heights of the walls and the section of the roof. The position of all doors, windows, and skylights should be shown, and the material (giving thicknesses) of which the building is composed should be stated.
- x. The thickness and nature of the stop butt.

- xi. It should be stated whether all openings such as doors and windows which it is necessary to protect are carefully and efficiently masked.
- xii. The arrangements made to guard against splinters.
- xiii. The lighting arrangements.
- xiv. The nature of the ground or floor of the range.

3. The G.O.C.-in-C. will carefully consider this report, and, if necessary, cause the range to be inspected by a member of his staff.

4. After satisfying himself that the instructions for the construction of miniature cartridge ranges contained herein have been complied with, and that funds are available, he will give sanction for the work to be carried out.

5. Should there be any doubt as to the safety of the range, the G.O.C.-in-C. will refer direct to the Commandant, Small Arms School, for his views and advice.

6. When a new range has been completed it will again be inspected before being brought into use. The original A.F. K 1311 used for approving its construction will be endorsed on the back to say that the range as constructed is safe for use, or, if necessary, any additional orders for safety will be added. When the range has been approved, the A.F. K 1311, duly approved, will be returned to the G.O.C.-in-C.

7. In the case of miniature ranges for the use of the Territorial Army, the correspondence will follow the channels indicated in Sec. 3, 12-15.

Ranges for rifle clubs

8. Miniature rifle clubs are entitled to free inspection by a competent military authority of all their ranges, provided that they are affiliated to one of the rifle club associations to which official recognition has been accorded.

9. The titles of all such organizations are communicated to G.Os.C.-in-C.

10. Secondary schools are entitled to the free inspection of miniature ranges provided for the use of the school rifle club.

11. The inspection and approval of miniature cartridge ranges constructed for rifle clubs or schools should only be undertaken on application from the secretary of the society to which the clubs are affiliated, or, in the case of secondary schools, from the headmaster of the school.

12. Travelling expenses necessarily incurred by officers engaged in the inspection of miniature cartridge ranges for rifle clubs may be borne by army funds.

13. On receipt of an application from the secretary of one of the societies or schools mentioned in paras. 8 and 10 above, for the inspection of a miniature cartridge range designed for the use of rifle clubs, the G.O.C.-in-C. will arrange for the inspection of the range by an officer of the regular forces.

14. This officer will submit his report on A.F. K 1311 (see para. 2 above), attaching the plans and sketches therein referred to, which will be prepared by him.

15. If the G.O.C.-in-C. is satisfied that the range is

safe (see paras. 3 to 5 above), he will give the necessary approval.

16. Formal approval of miniature cartridge ranges for rifle clubs will be conveyed to the secretary of the society, or, in the case of secondary schools, to the headmaster, by means of a certificate (A.F. K 1314).

17. When it is desired to construct a miniature range of less than 15 yards, applications accompanied by a plan and longitudinal section of the proposed range will be submitted to the War Office before any other action is taken in the matter.

27. Range and Penetration of .22-in. Ammunition

1. The types of .22-inch ammunition made by different manufacturing firms vary considerably in power. It must be borne in mind that the long ammunition, as generally used, containing 4 to 7 grains of powder and a bullet weighing 40 to 45 grains, with a muzzle velocity of 900 to 1,300 feet a second, has considerable power, and a maximum range up to 1,300 yards when fired at an angle of elevation of about 33 degrees. Suitable precautions must, therefore, be taken to ensure complete safety.

2. The following thicknesses of material have been found to be proof against occasional direct hits :—

4½ inches concrete or good brickwork.

12 inches earth or sand.

6 inches gravel.

3 inches shingle or granite chippings between planks.

½ inch steel plate.

5 inches hard timber, such as old sleepers.

3. Directly behind the targets, where there will be a large number of direct hits, additional protection must be given, such as $\frac{3}{16}$ inch steel plate, or sleepers, or 12 inches earth in addition to a brick wall, or other type of stop butt.

4. In positions where only occasional glancing hits will be obtained such as side walls, floors or ceilings, the following thicknesses may be considered as safe :—

1 inch planking.

Ordinary plaster ceiling.

Tile or slate roof.

5. If, however, any roof is so designed that it may be struck by a direct or almost direct hit, then the additional protection given in para. 2 must be provided.

6. Corrugated iron is not safe for either side walls or roof, as owing to the corrugations it is possible for a bullet to strike the metal at a dangerous angle ; and so all corrugated iron on the side walls within 5 degrees of the flank lines of fire, or in the case of the roof within 7 degrees of the line of sight must receive extra protection (see Sec. 30, 14).

28. *Types of Miniature Ranges*

1. The various types of ranges met with are as follows :—

Type I.—Out-of-doors with small stop butt and with danger area.

Type II.—Out-of-doors with full stop butt, without danger area.

Type III.—Partially enclosed, without danger area.

Type IV.—In drill hall or gymnasium.

Type V.—In separate building.

2. Their chief characteristics are as follows :—

Type I.—Suitable for seashore, open moorland, etc., where it is possible to ensure clearance to a distance of 700 yards behind the targets and 80 yards to the flanks ; this type saves the cost of erecting a high stop butt. It also allows firing at ranges over 25 yards.

Type II.—A suitable form of range when the firers are available during hours of daylight ; range up to 100 yards ; stop butt 12 to 15 feet high, of bullet-proof material, and extending from 6 feet to 10 feet beyond the flank lines of fire, according to the nature of the surroundings. A quarry is often a suitable site for this type.

Type III.—A poor compromise ; range 25 yards ; stop butt as in Type II ; some form of cover provided at firing point and sometimes at the stop butt in addition ; artificial lighting is usually difficult ; protection against weather is often quite insufficient.

Type IV.—A good form of range from a weapon training point of view and usually inexpensive, but sometimes interferes with other forms of training ; range 15 yards to 25 yards ; stop butt 12 feet high of bullet-proof material, and extending 6 feet beyond the flank lines of fire ; artificial light and heat ; can be used by day or night.

Type V.—The normal type and the only one in which the training in all subjects referred to in Sec. 25, para. 2, can be conveniently and efficiently carried out ; range 25 yards ; stop butt equiva-

lent of Type IV; good day lighting; artificial light and heat; raised firing platform and, if possible, trench as well; tiers of seats behind firing platform; width of building 16 feet to 24 feet; interior length 100 feet; site any suitable.

29. *Selection of Sites and construction of Outdoor Miniature Ranges*

1. Outdoor ranges have the advantages of natural light and ordinary wind effects, and can usually be constructed at a very slight cost. The disadvantage, however, that these ranges cannot be used under ordinary conditions in wet weather, or in the evenings, will usually outweigh the advantages.

2. If a danger area is necessary, there is another disadvantage in that the range will usually have to be sited at some distance from barracks or T.A. drill halls.

Type I.—Outdoor ranges with small stop butt and with danger area.

3. Unless a stop butt of the dimensions given in para. 14 of this section is provided, a .22-inch cartridge range must have a danger area behind the targets of the following dimensions:—

Depth (measured from the targets), 700 yards;
width, 80 yards on each side measured from the flank lines of fire.

4. Thus, for a one-target range, the normal danger area measures 700 yards in depth by 160 yards in width;

but for a range of 12 targets spaced at three foot intervals from centre to centre the normal danger area is 700 yards in depth by 160 yards, plus 11 intervals of 3 feet, equals 171 yards in width.

5. It is necessary to obtain the consent in writing of all the owners or tenants of the land in this danger area to the construction of the range.

6. Steps must be taken to see that no person enters the danger area while firing is in progress.

7. The area should contain no dwelling-houses, nor should it be crossed by any main road or other channel along which there is considerable traffic. Lesser roads, paths, rights of way, etc., along which there is little traffic, do not constitute an absolute objection to a range, but they are very undesirable, as look-out men with flags have to be provided to watch them while firing is going on, and firing must be stopped whenever any traffic desires to cross the danger area.

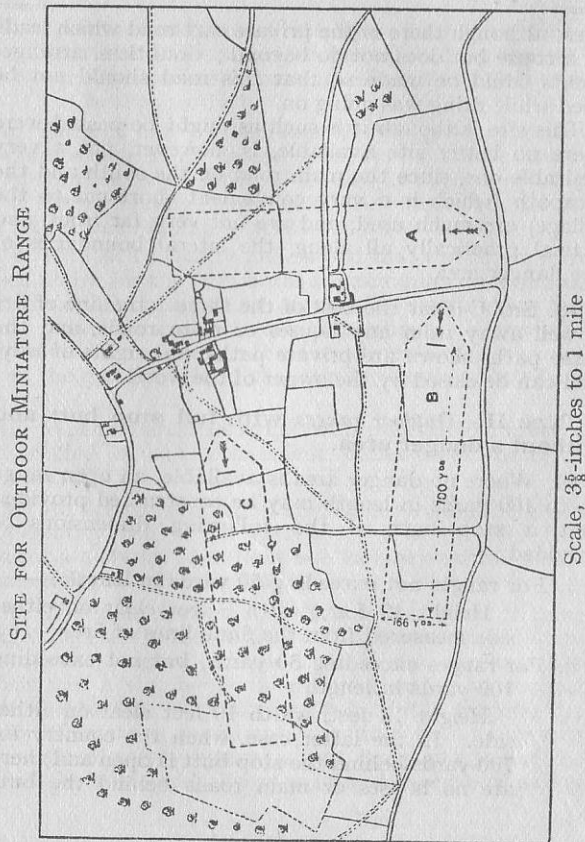
8. These conditions, though at times easily obtainable in the outskirts of country villages, are, as a rule, impracticable in the outskirts of towns, where resort must be had either to a large stop butt or to a closed-in range.

9. Although when a danger area is available, a stop butt is not an absolute necessity, it is very desirable, and should be at least 6 feet high and 5 feet clear outside the flank targets. It should be borne in mind that the chief source of danger on all ranges is the ricochet, and every effort should be made to catch all bullets at the target.

10. Plate 26 is a reduced reproduction of a portion of an Ordnance Map, having marked on it three proposed sites for miniature ranges, which are intended for use without large stop butts. These sites are marked A, B, and C, and in each case the position of the targets is shown by a plain line, and the direction of the proposed line of fire by an arrow. The boundaries of the danger areas, viz., 700 yards in depth and 80 yards in width beyond the flank lines of fire, are in each case shown in dotted lines.

11. Of the above three proposals site A is the least desirable for the following reasons:—There is a road crossing the danger area at about 350 yards behind the targets; there is also a footpath crossing it diagonally, though further off; finally there is a block of houses quite close to the boundary of the danger area. In this case, although firing rights might be obtained from the owners of the fields actually in the danger area, yet firing would have to be stopped while persons were crossing the danger area either by the road or by the footpath, and this would probably necessitate the placing of two or more look-out men with flags near the road and path in question in order to signal to the firing point when any persons were about to cross. But, besides the delay and inconvenience occasioned by this, there is always a grave objection to siting an open range with its boundaries close to buildings, where there are possibly children who cannot be kept away from the danger area.

12. As regards B, this proposal is a material improvement on A; there are no footpaths crossing the danger



area, although there is one private cart road which leads to a copse but does not go beyond; doubtless, arrangements could be made so that this road should not be used while firing was going on.

This site, although it is such as might be passed were there no better site available, is, however, not a very desirable one, since the main road on the south and the footpath (which is a very convenient short cut to the village) are much used, and are not very far from, and extend practically all along, the lateral boundaries of the danger area.

13. Site C is far the best of the three: the line of fire is well away from any houses or main roads, and the three paths shown are private paths, not rights of way, and can be closed by the owner of the wood.

Type II.—Outdoor ranges with full stop butt and without a danger area.

14. Where no danger area is available, an open range up to 100 yards in length may be constructed provided that a stop butt of the following dimensions be provided:—

- i. For ranges not exceeding 50 yards in length:—
Height 12 feet, width 6 feet clear on either side measured from the flank lines of fire.
- ii. For ranges exceeding 50 yards, but not exceeding 100 yards in length:—
Height 15 feet, width 10 feet clear on either side. In the latter case, when the country for 700 yards behind the stop butt is open and there are no houses or main roads behind the butt

within that distance, the dimensions given above for the stop butt may be reduced at the discretion of the inspecting officer to 12 feet and 8 feet respectively.

15. Sites B and C, on Plate 26, are good examples of cases where, if no danger area were obtained and a large stop butt were erected, the height of the stop butt for a 100 yards range might safely be reduced to 12 feet. On site A this reduction would not be advisable.

16. It must be clearly understood that the dimensions given above for the stop butts are minimum dimensions, and strict discipline must always be exercised at the firing points to avoid all risk of accident. If possible, it is advisable to increase these measurements, especially when the ground behind the stop butt is frequented by the public.

17. When an artificial stop butt is necessary, it may be constructed of any convenient bullet-proof material. (See Sec. 27, 2.)

18. Additional protection should in all cases be given immediately behind the targets for a height of 5 feet and for a distance of at least one foot beyond the flanks of the targets. (See Sec. 27, 3.)

19. The main feature upon which the safety of these ranges depends is the vertical butt situated immediately behind the targets. If the butt is not vertical, but consists of a sloping bank of earth, or if the vertical butt is situated 10 or 20 feet behind the targets, the factor of safety is considerably reduced both as regards the angle of safety against direct shots going over the top of the butt, and also as regards the angle of safety

provided against ricochets which have struck the ground just short of the targets; it is this latter factor which is most frequently overlooked and which needs special attention.

20. If a natural bank or cliff is used as a stop butt, the targets should be placed as near to the foot of the slope as possible. The slope of the ground should not be less than three over two for a height equivalent to the required stop butt. To ascertain this height, erect a 12 or 15 foot rod (as the case may be) vertically at the targets and note the point where the line of sight from the ground level at the nearest firing point through the top of the rod cuts the bank. (See Plate 27.)

To be equivalent to a vertical stop butt, the slope must be at least $3/2$ from the targets to the point thus found.

21. If the total effective height of the hill, *i.e.*, the perpendicular distance from the line of sight produced to the top of the hill, exceeds 80 feet the range may be considered safe provided that the slope of the ground exceeds $1/1$.

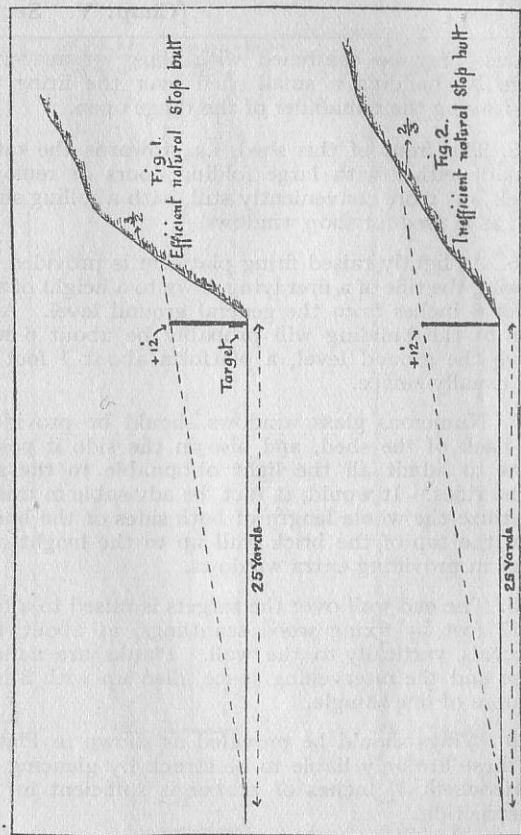
22. The line of sight should if possible be level or slightly downhill. Ranges with uphill lines of sight require extra precautions and should be avoided.

23. If other considerations permit, the targets should face south to obtain a good light.

Type III.—*Partially enclosed range without a danger area.*

24. Plate 28 shows how a few of the advantages of an indoor range, as regards independence of weather con-

NATURAL STOP BUTT FOR MINIATURE RANGE



ditions, may be combined with those of an outdoor range by building a small shed over the firing point and leaving the remainder of the range open.

25. The front of this shed, *i.e.*, towards the targets, is made either with large folding doors or removable panels, or, more conveniently still, with a rolling shutter such as is used for shop windows.

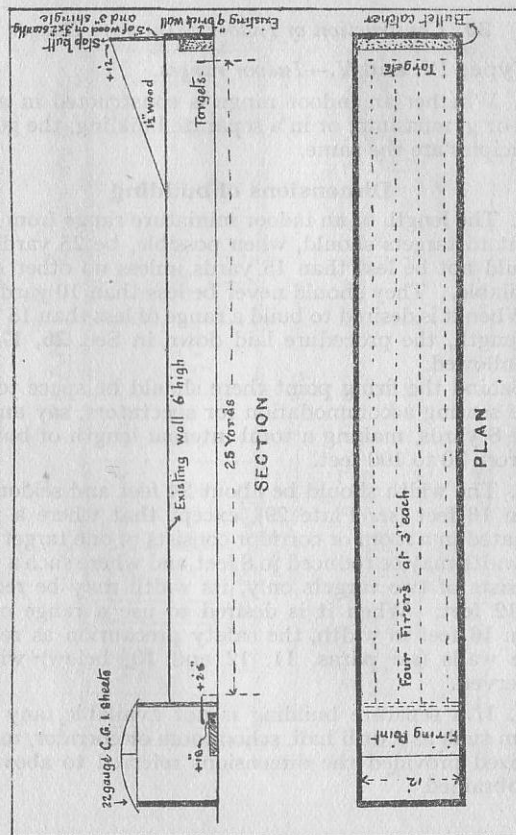
26. A slightly raised firing platform is provided so as to bring the rifle of a firer lying down to a height of about 2 feet 6 inches from the general ground level. As the floor of the building will probably be about 6 inches above the ground level, a platform about 1 foot high will usually suffice.

27. Numerous glass windows should be provided in the back of the shed, and also in the side if possible, so as to admit all the light obtainable to the sights of the rifles. It would, in fact, be advisable in this case to utilize the whole length of both sides of the building from the top of the brick wall up to the height of the eaves in providing extra windows.

28. The end wall over the targets is raised to a height of 12 feet by fixing wood scantlings, at about 4 feet intervals, vertically to the wall. Planks are nailed to these and the intervening space filled up with 3 inches or more of fine shingle.

29. Wings should be provided as shown in Plate 28. As these are only liable to be struck by glancing shots or ricochets, $1\frac{1}{2}$ inches of timber is sufficient for their construction.

ENCLOSED TYPE OF OUTDOOR MINIATURE RANGE



30. Construction of Indoor Miniature Ranges

Types IV. and V.—Indoor ranges.

1. Whether an indoor range is constructed in a drill hall or gymnasium, or in a separate building, the general principles are the same.

Dimensions of building

2. The length of an indoor miniature range from firing point to targets should, when possible, be 25 yards and should not be less than 15 yards unless no other site is available. They should never be less than 10 yards.

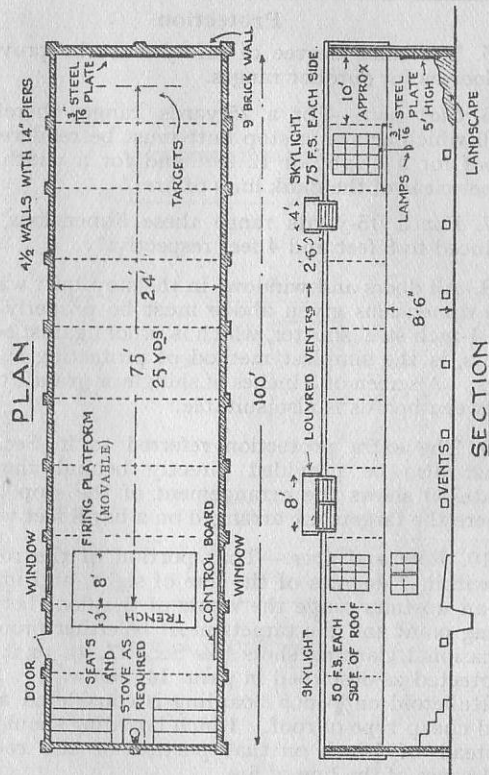
When it is desired to build a range of less than 15 yards in length, the procedure laid down in Sec. 26, 17, will be followed.

Behind the firing point there should be space to provide seating accommodation for spectators, say another 7 or 8 yards, making a total internal length of building of from 70 to 100 feet.

3. The width should be about 24 feet and seldom less than 16 feet (*see* Plate 29), except that where a range situated in a room or corridor consists of one target only, its width may be reduced to 8 feet, and where such a range consists of two targets only, its width may be reduced to 12 feet. When it is desired to use a range of less than 16 feet in width, the safety precaution as regards side walls (*see* paras. 11, 12 and 13, below) will be observed.

4. If a separate building is not available, any large room such as a drill hall, schoolroom or corridor, may be utilized provided the dimensions referred to above can be obtained.

SUGGESTED TYPE FOR MIN: RANGE



Protection

5. The same degree of safety must be provided for indoor as for outdoor ranges.

6. *Stop butt.*—For a 25-yards range, therefore, the wall which acts as a stop butt must be rendered bullet-proof for a height of 12 feet and for a width at least 6 feet clear of the flank lines of fire.

7. For a 15-yards range these dimensions may be reduced to 8 feet and 4 feet respectively.

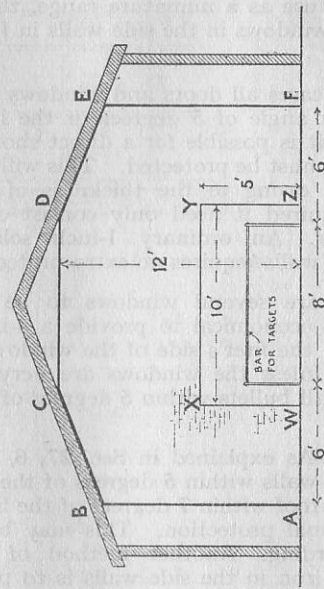
8. All doors and windows in the stop butt wall within the dimensions given above must be properly masked. An $\frac{1}{8}$ -inch steel shutter, which is proof against occasional shots, is the simplest method of protecting such openings. A screen of 3 inches of shingle or granite chippings between boards is also suitable.

9. The extra protection referred to in Sec. 29, 18, must also be provided directly behind the targets. Plate 30 shows the arrangement of the stop butt wall where the targets are arranged on a bar 8 feet wide.

10. *Roof and floor.*—That portion of the roof which is within 7 degrees of the line of sight, and in the case of an upstairs range the whole of the floor between the firing point and the targets must be either proof against occasional glancing shots (*see* Sec. 27, 4), or it must be protected as described in para. 14, below.

Ruberoid on $\frac{3}{4}$ -inch boarding is considered a suitable and cheap type of roof. 1-inch boarding should be used instead of $\frac{3}{4}$ -inch on that portion of the roof within 7 degrees of the line of fire.

STOP BUTT FOR 25-YARDS MIN. RANGE



Space A.B.C.D.E.F. to be bullet-proof against Occasional Hits. Space W.X.Y.Z. to have additional protection against Concentrated Fire.

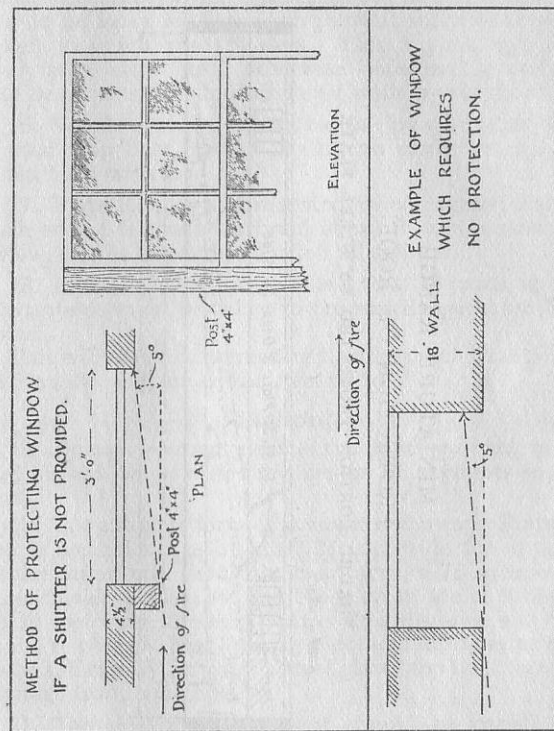
Timber roof trusses should be used in preference to steel.

11. *Side walls.*—When a separate building is specially constructed for use as a miniature range, there should be no doors or windows in the side walls in front of the firing point.

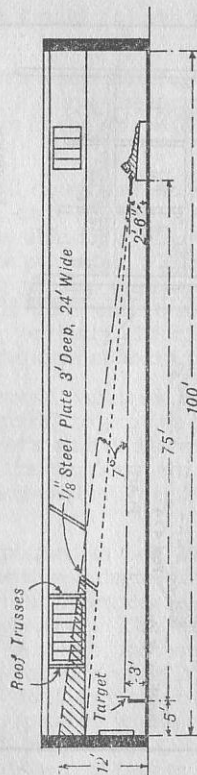
12. In other cases all doors and windows in the side walls within an angle of 5 degrees of the line of fire, through which it is possible for a direct shot to escape from the room, must be protected. This will sometimes be unnecessary owing to the thickness of the walls. When it is required it need only consist of a 1-inch wooden shutter. An ordinary 1-inch solid wooden door in the side walls requires no extra protection.

13. If there are several windows to be protected, it will be more economical to provide a 4-inch square wooden post on the firer's side of the window as shown in Plate 31. Unless the windows are very wide this post will catch all bullets within 5 degrees of the line of fire.

14. *General.*—As explained in Sec. 27, 6, corrugated iron in the side walls within 5 degrees of the flank lines of fire or in the roof within 7 degrees of the line of sight requires additional protection. This may be provided by 1-inch boarding. Another method of protecting the corrugated iron in the side walls is to place 4-inch square wooden posts 4 to 5 feet apart similar to those shown in Plate 31 to protect windows. The roof is usually best protected by placing a $\frac{1}{8}$ -inch steel plate on the bottom of one of the roof trusses (see Plate 32).



MINIATURE RANGE
PROTECTION OF ROOF
SHADED PORTION PROTECTED BY STEEL PLATE



15. All metal which is liable to be struck by bullets should be faced with wood to prevent splinters or steps taken to catch the splinters. This applies especially to a steel stop butt, otherwise considerable damage will be done to the floor and side walls by splinters.

16. Wooden paving blocks backed by steel plate form a good stop butt, as the blocks can easily be replaced when filled with lead.

17. Plate 33 shows how a strip of corrugated iron on each end of the stop butt and above it, and a sand box below, can be arranged to catch all splinters.

18. In the case of a range of less than 15 yards, special precautions must be taken to prevent danger from back splash.

This will be done by erecting a bullet catcher, as shown in Plate 34, in front of the steel plates.

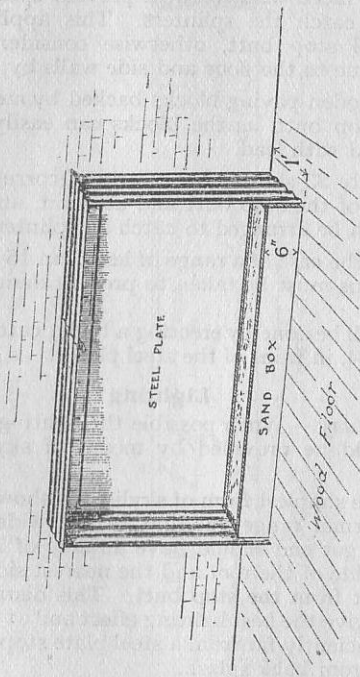
Lighting

19. *By day.*—When possible the lighting at the target end should be provided by means of skylights in the roof.

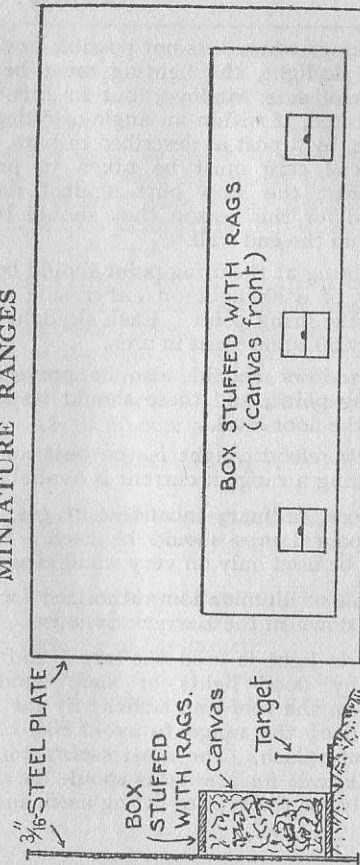
20. The simplest form of skylight is shown in Plate 29. For a normal range building 24 feet wide the skylight at the target end should have an area of 75 square feet on each side of the roof and the nearest side of it should be 10 feet from the stop butt. This distance has been found to give the best lighting effect and at the same time to be sufficiently far from a steel plate stop butt to avoid damage from back splash.

21. The size of the skylight should be varied proportionately to the width of the range.

STEEL STOP BUTT SHOWING PROTECTION AGAINST SPLINTERS



METHOD OF PREVENTING BACK SPLASH ON SHORT
MINIATURE RANGES



SECTION

FRONT VIEW.

22. In buildings where it is not possible or convenient to provide a skylight, the lighting must be arranged for by means of side windows, but in this case they must be protected, if within an angle of 5 degrees with the line of fire, by a post as described in para. 13 of this section. Special care must be taken to protect the windows nearest the stop butt against damage by splashes; and for this reason they should be kept at least 8 feet from the end wall.

23. The lighting at the firing point should be arranged for by means of a skylight on either side of the roof directly over the firing point. Each skylight should be approximately 50 square feet in area.

24. Side windows should also be provided in line with the firing point, and these should be kept about 6 feet above the floor level.

25. *By night*, electric light is the best and simplest means of lighting a range if current is available.

26. Otherwise, ordinary incandescent gas, acetylene, or petrol vapour lamps should be used. Paraffin oil lamps should be used only on very small ranges.

27. The scale of illumination authorized for miniature ranges is laid down in the Barrack Synopsis.

28. If electric light is used the target end should be illuminated by flood lights or shop window lights suspended from the roof and sufficiently far back from the back wall of the range to avoid risk of breakage through bullet splash. The most satisfactory distance from the back wall for the lights should be determined experimentally for the type of fitting used, and the lamp

or lamps should then be suspended at this distance by means of guide ropes and pulleys. The lamps should be protected on the firing side by a 1-inch plank with a $\frac{1}{8}$ -inch steel plate.

29 It is advisable to protect gas or petrol vapour lamps from back splash by means of pieces of plate glass placed in front of each lamp. These lamps require also the $\frac{1}{8}$ -inch steel plate protection from bullets on the other side.

30. Incandescent gas or petrol vapour lamps are best arranged in a number of (say, six or eight) comparatively small candle-power lamps, as these give a more even distribution of the light. They can, however, if necessary, be arranged simply with one or two high candle-power lamps. The ordinary incandescent gas mantle burner gives about 50 candle-power.

31. Acetylene gas is best arranged with a large number of burners.

32. All lamps should be provided with reflectors; the side of the protecting board nearest the targets should be painted white.

33. When gas or other lamps are used, incandescent burners or lamps should be arranged in order to obtain satisfactory lighting of the target.

34. Electric lights can, if desired, be used as footlights, but it will usually be necessary to have additional raised lights as well.

35. Other types of lamps, *i.e.*, gas, petrol vapour, etc., should not be used as footlights owing to the heat haze produced.

36. The above paragraphs refer to the lighting of the targets close to the stop butt. In some ranges, however, battle practice targets are arranged extending down the range between the stop butt and the firing point. These targets are only intended to represent battle conditions where dust and smoke often make targets very indistinct. They need not, therefore, be brightly illuminated, and two or three lamps of medium candle-power only will be provided in the centre portions of those ranges which are thus fitted up with battle practice targets. They should be so shaded that the lights themselves are not visible from the firing point. These additional lights should not be lit when shooting at the ordinary application or snap-shooting targets.

37. The light at the firing point should be kept as small as possible. One 40-watt lamp or the equivalent is ample and should be suspended about 9 feet above the centre of the firing platform and directly over the men's feet when in the lying position, or further back when possible. A suitable shade should be supplied to prevent direct glare from the bulb shining on the rifles, while at the same time giving sufficient light to enable the firers to see to load, etc.

38. There should be no lights between those at the target end and the firing point, except in the case referred to in para. 36 above.

39. Where arrangements are made for spectators, an additional 60-watt lamp or the equivalent should be provided for use during instruction in subjects other than actual shooting.

40. When a range is situated in a drill hall or other building where there are a number of lights besides those at the targets and the firing point, the light at the firing point should be at least equal to the remainder of the lighting of the hall.

Ventilation

42. When firing is taking place, considerable fumes and a certain amount of smoke are given off by the ammunition. On this account it is essential that good ventilation be provided. This is particularly necessary in the case of specially constructed ranges, where there are no windows in the side walls.

43. Ventilation should be provided by means of small ventilators placed along the side walls about 1 foot above floor level, and by louvred or sash ventilators in the roof. The largest roof ventilator should be placed a short distance in front of the firing point (*see* Plate 29).

44. For a range 24 feet wide, the ventilators near the floor should consist of holes about 1 foot square covered with a fairly large mesh gauze, spaced about 8 or 10 feet apart along each side wall between the firing point and the targets.

45. The roof ventilators should be well raised so as to form a box above the roof in which the smoke and fumes collect. They should be about 2 feet 6 inches high and 8 feet long near the firing point and 4 feet long near the target end.

Firing points

46. Movable firing platforms 8 feet long, 3 feet wide, 18 inches high in front and 1 foot high at the back.

should be provided on all ranges. Each firer has one of these platforms. The 8 feet length is required in order to allow men to take proper cover when lying behind a sandbag placed on the front of the platform.

47. When possible a trench should also be provided. The trench should be 3 feet deep, and the firing platforms referred to above should be reversed and used as the parapet of the trench when the latter is used (see Plate 29).

48. When it is not possible to dig a trench, some form of screen should be used to represent the trench. Plate 35 shows two types of screen which can be employed for this purpose.

Marking arrangements

49. Various forms of travelling target carriers exist, by means of which one set of targets can be sent down to the butt while the other set is brought to the firing point for checking.

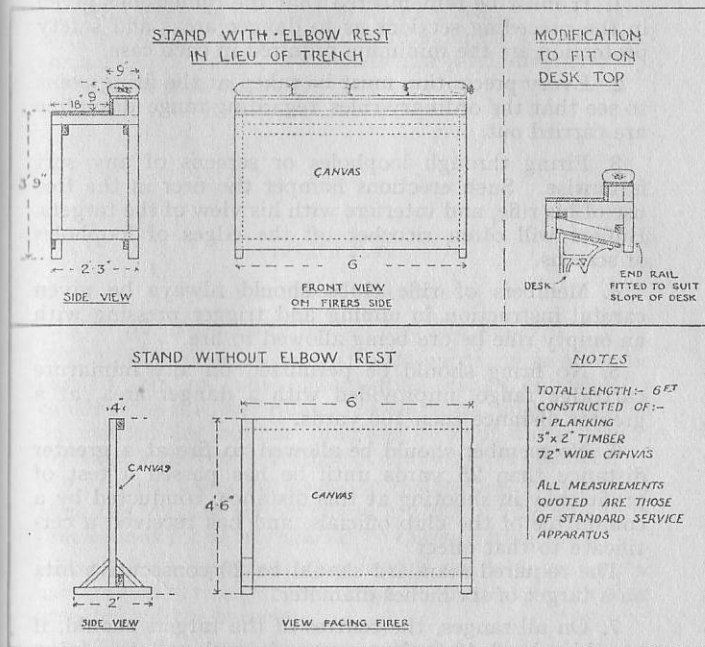
50. For ranges up to 25 yards this is the most suitable arrangement; if not available, marking can be carried out by means of field glasses or telescopes.

51. For longer ranges a pit may be sunk or a mantlet erected for the marker; but unless great care is exercised, this system is a fruitful source of accidents.

Design

52. Plate 29 shows a type of specially constructed indoor miniature range which is designed in accordance with the particulars given in the preceding paragraphs.

SCREENS IN LIEU OF TRENCHES AT FIRING POINTS



31. *General Instructions regarding Safety Precautions on all Types of Miniature Ranges*

1. It must be remembered that the dimensions given in the preceding sections as to danger areas and safety protection are the minimum required in each case.

2. Every precaution must be taken at the firing point to see that the ordinary rules regarding range discipline are carried out.

3. Firing through loopholes or screens of any sort is unwise. Such erections hamper the firer in the free use of his rifle, and interfere with his view of the targets. Bullets will often ricochet off the edges of loopholes or screens.

4. Members of rifle clubs should always be given careful instruction in aiming and trigger pressing with an empty rifle before being allowed to fire.

5. No firing should be permitted on any miniature cartridge range, unprovided with a danger area, at a greater distance than 100 yards.

6. No member should be allowed to fire at a greater distance than 25 yards until he has passed a test of proficiency in shooting at this distance, conducted by a committee of the club officials, and has received a certificate to that effect.

The required standard should be 20 consecutive hits on a target of six inches diameter.

7. On all ranges, the centres of the targets should, if possible, be 3 feet above ground level and the firing points should be raised 18 inches to lessen the chance of ricochets off the floor of the range.

8. The ground of outdoor ranges should be kept smooth and free from irregularities such as large stones, clumps of turf, etc., which may cause bad ricochets. Long grass is the best preventive of ricochets and its growth should be encouraged where possible. For short ranges asphalt or smooth concrete forms an excellent surface for a range, as bullets rise and diverge very slightly off such material.

CHAPTER VI

REVOLVER RANGES

32. *Selection of Ranges and Danger Area*

1. Revolver practices up to 20-yards range may be carried out on any classification range or specially constructed revolver range. A 30-yards range may also be utilized for similar practices, except those which necessitate movement either of the target or the firer.

2. As the extreme range of the 265-gr. bullet fired from the Webley service pistol is 1,550 yards, adequate precautions for safety should be taken during firing.

3. Unless an efficient stop butt is available or can be constructed, arrangements must be made for a danger area behind the targets.

4. This danger area must extend to a depth of at least 1,000 yards from the firing point and its flanks

should extend 30 degrees beyond the flank lines of fire (see Plate 36).

5. When no danger area is provided, the stop butt must be at least 18 feet high and must extend at least 22 feet beyond flank lines of fire.

6. Plate 37 shows a suitable design for a revolver range on lines similar to those of a 30-yards range, but with a longer stop butt wall and without a ricochet pit, for which no danger area is required. Arrangements are made on this range for all the types of target used in the ordinary revolver course.

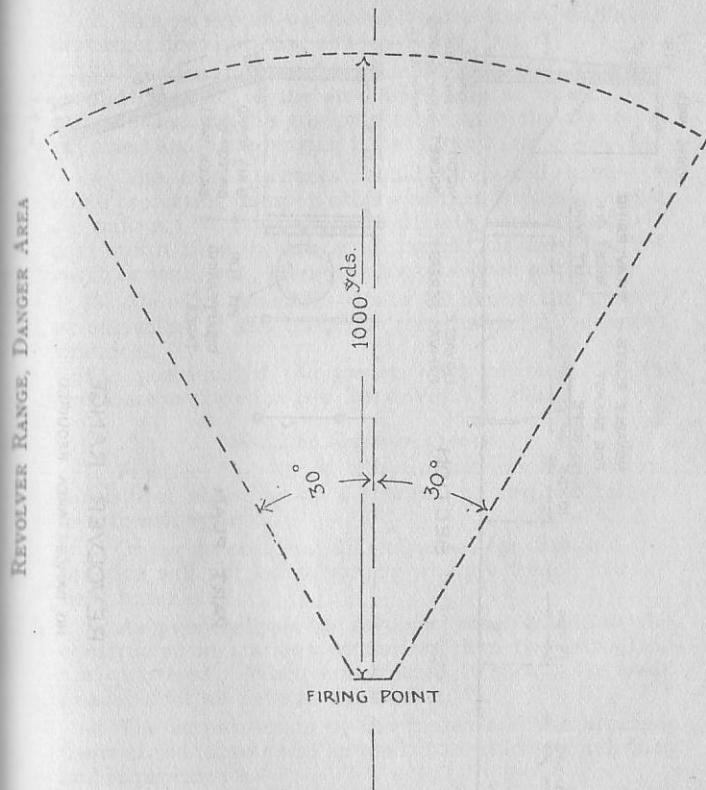
7. The apparatus for the traversing and snaphooting targets suitable for use on this type of range are shown in Plates 113 *et seq.*

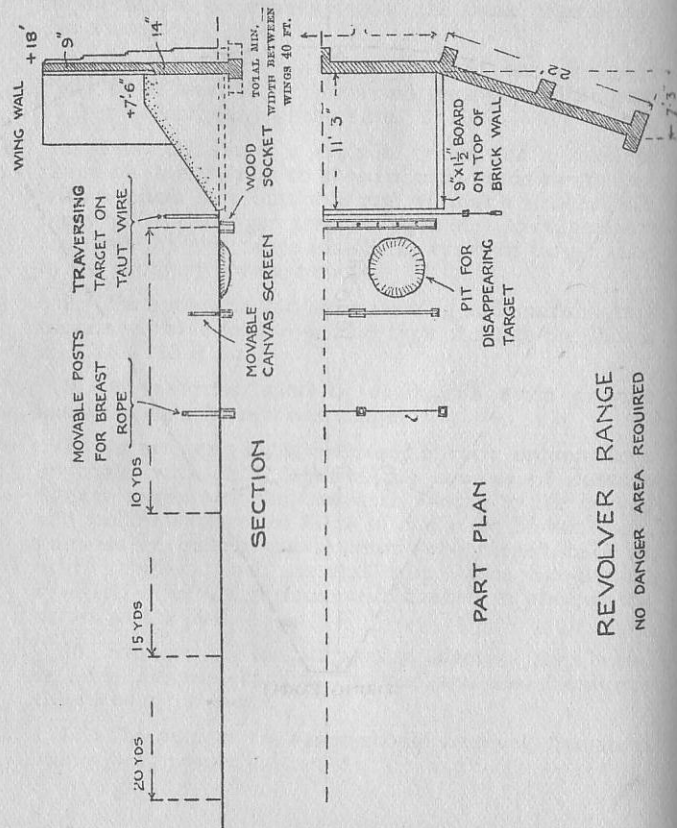
8. Old quarries, sand or chalk pits often provide excellent sites for revolver ranges.

9. Natural stop butts composed of rock, broken stone or chalk with flint deposits, are sources of possible danger to firers at short ranges. Owing to the curved and hollow surfaces of flints in chalk, or broken rock, portions of bullets will sometimes be turned back at acute angles. Such natural stop butts should be revetted with turf, or faced with timber, to prevent the return of the lead.

10. Sand or soft earth makes satisfactory stop butts, as such material catches the lead and also facilitates the recovery of metal.

11. The floor of the range should be level, free from stones, and properly drained.





12. Ranges should be sited so that a firer when facing his target does not have the sun in his eyes.

13. Wooden box sockets should be sunk into the ground close up to the stop butt, and so made as to take the legs of the grouping targets, or the stakes of the fixed and disappearing figure targets (*see* Plate 117).

14. The target sockets should be placed behind a small protecting parapet, otherwise they will be damaged by bullets. Wooden plugs to fit into each socket will save much time in setting up targets, as they prevent earth or sand, etc., filling the sockets when not in use.

15. *Mounted practices.*—Plate 38 shows the general arrangement of the track for the conduct of mounted practices.

The positions of the targets with reference to the track are as stated in Sec. 20, 4, Vol. IV, 1931.

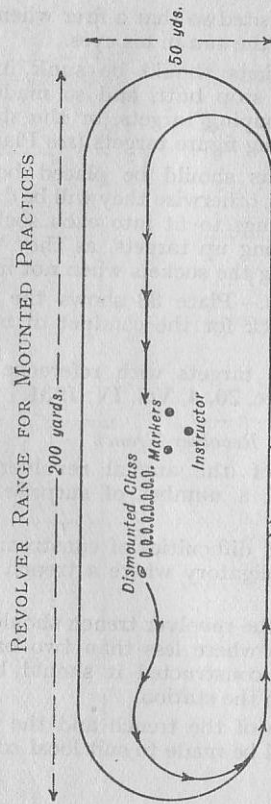
33. The Revolver Trench

1. Practice No. 9 of the annual revolver course consists of shooting at a number of surprise targets in a trench system.

2. Owing to cost and difficulties of construction this practice will not be obligatory where a trench has not been provided.

3. As a general rule the revolver trench should not be constructed in stations where less than two battalions are quartered. When constructed it should be made available for all units in the station.

4. The actual design of the trench and the arrangement of the targets will be made to suit local conditions and requirements.



The positions of targets are for firing to the *RIGHT* front. For practices fired to the *LEFT* front movement will be in the opposite direction to that shown above.

5. When arranging the targets, the safety precautions and dimensions of danger areas referred to in Sec. 32 must be carefully considered.

6. If no danger area is available, all the targets must either be placed at the bottom of a deep narrow trench or else special stop butts must be constructed.

7. The trench must not be less than 7 feet deep and not more than 4 feet 6 inches wide at the top or 2 feet 6 inches wide at the bottom unless there is a danger area available.

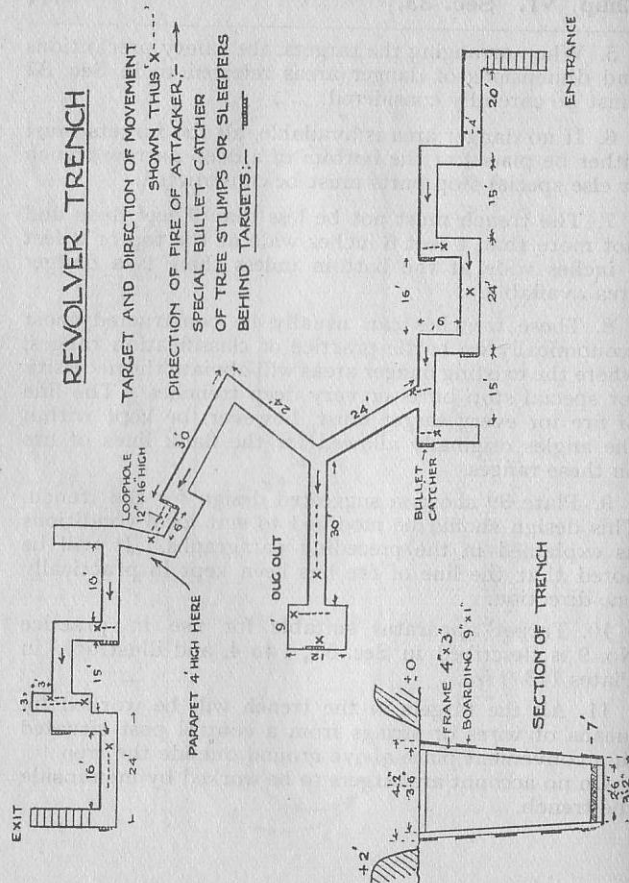
8. These trenches can usually be constructed most economically on battle practice or classification ranges, where the existing danger areas will obviate the necessity for special stop butts or very deep trenches. The line of fire for every target must, however, be kept within the angles originally allowed for the flank lines of fire on these ranges.

9. Plate 39 shows a suggested design for the trench. This design should be modified to suit local conditions as explained in the preceding paragraphs. It will be noted that the line of fire has been kept in practically one direction.

10. Target apparatus suitable for use in practice No. 9 is described in Sec. 51, 1 to 4, and illustrated in Plates 113 *et seq.*

11. All the targets in the trench will be worked by means of wires or strings from a control post situated in a convenient place above ground outside the trench.

On no account are targets to be worked by men inside the trench.



34. Revolver Battle Practice Range

1. In addition to the trench practice described in the preceding section, a range can be constructed on the lines of that shown in Plate 40. This gives good practice for shooting at various forms of surprise targets which appear in different directions and different ranges from the firer.

2. A large danger area is required extending for a depth of 1,100 yards from the firing point and 30 degrees beyond the flank lines of fire.

3. Target apparatus similar to that used for the trench practice is suitable for this range also.

CHAPTER VII

GENADE THROWING AND FIRING AREAS

35. Dummy Grenades

Rifle grenades

1. The No. 36 rifle grenade can be fired up to a maximum range of about 200 yards, and the No. 54 rifle grenade to a maximum range of 400 yards. Any ground, therefore, that has the necessary length may be used for firing dummy rifle grenades, as there is no bursting effect and practically no chance of ricochet owing to the steep angle of descent at the maximum range.

REVOLVER BATTLE FIRING RANGE
board with pulleys
movable

 MARKERS PIT
AND STORE
FOR GEAR

 Our Trench
System

 Enemy Trench System
RUNNING MAN
30 YDS.

114

Saphead

 FIRING
POINT

shell holes

20

70*

85*

Chap. VII. Sec. 35.]

115

2. The ground chosen should not be very rocky or a large percentage of the dummy grenades will be broken. Similarly it should not be of a marshy nature or they will sink into it and be lost.

3. No special apparatus need be provided, but it is advisable to have a few shell holes dug, or other aiming marks provided in order to teach the firers how to get the correct range and direction.

Hand grenades

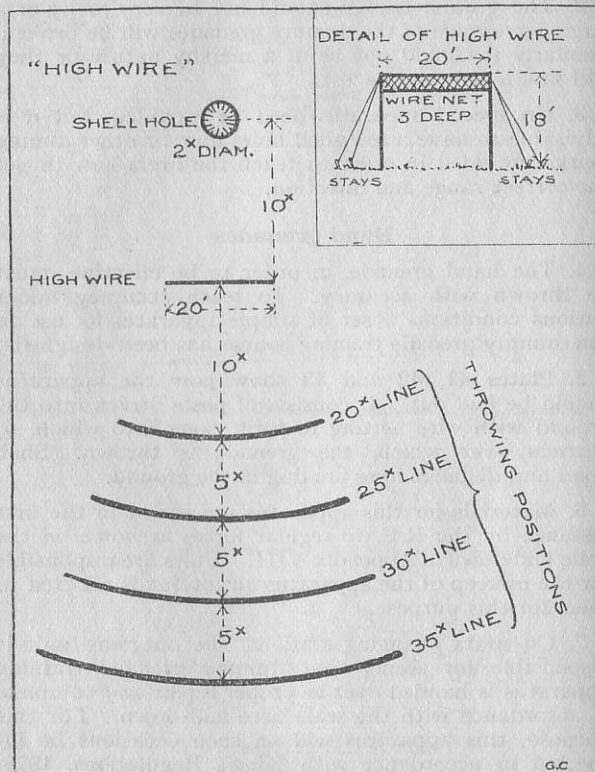
4. The hand grenade, in order to be effective, must be thrown with accuracy. To teach accuracy under various conditions a set of simple apparatus for use on the dummy grenade training course has been designed.

5. Plates 41, 42 and 43 show how the apparatus should be laid out. It consists of posts driven into the ground with wire netting to form cages into which, or barriers over which, the grenade is thrown. Shell holes and distance lines are dug in the ground.

6. Materials for this apparatus are issued in the first instance by the R.E. to regular forces at home on the scale laid down in Appendix VIII. Units are responsible for the upkeep of the apparatus out of funds allotted to them for this purpose.

7. On units changing stations, the outgoing unit is responsible for seeing that dummy grenade training apparatus is handed over in proper repair and complete in accordance with the scale here laid down. For this purpose, this apparatus will on such occasions be inspected in accordance with King's Regulations, 1928,

PLATE 41 116
DUMMY GRENADE TRAINING APPARATUS



117 PLATE 42
DUMMY GRENADE TRAINING APPARATUS

Fig. 1. "SHELL HOLE"

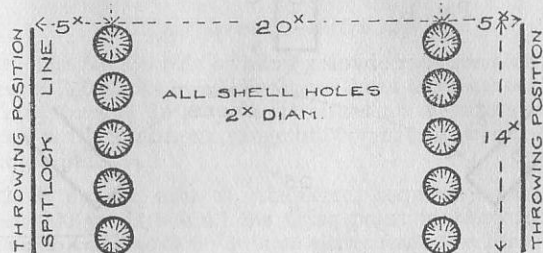
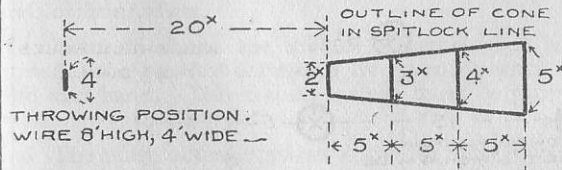
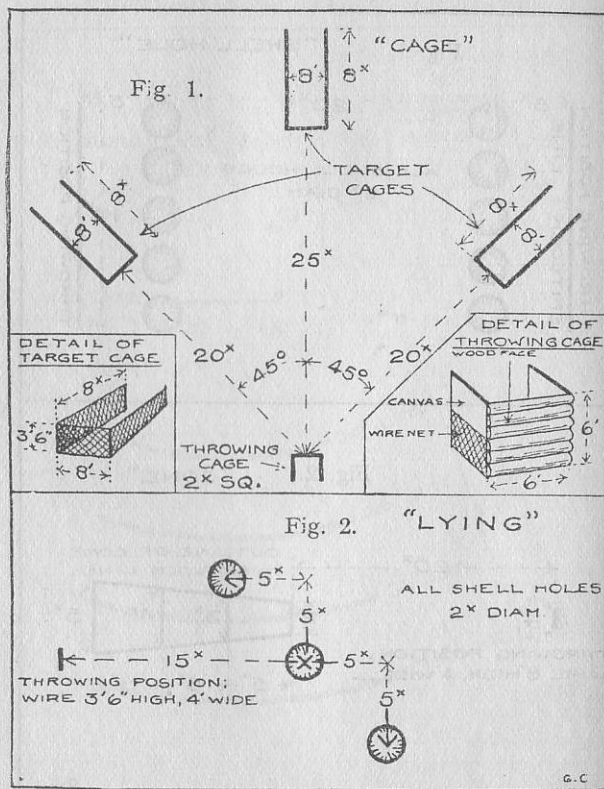


Fig. 2. "CONE"





paras. 1277 *et seq.*, and all breakages and deficiencies made good by the outgoing unit from the annual maintenance grant.

36. Live Grenades—High explosive

1. The No. 36 rifle or hand grenade requires a danger area of 200 yards in all directions from any point where it may burst. It may burst either at the firing point or up to the maximum range of 200 yards in front of the firing point.

2. A danger area is, therefore, required extending from 200 yards behind the firing point to 400 yards in front of it and to 200 yards on either flank (*see* Plate 44).

In the case of the No. 54 grenade, the maximum range is 400 yards. The length of the danger area in front of the firing point must, therefore, be increased to 600 yards.

3. It will be noted that the firing point is inside the danger area; consequently, special precautions have to be taken. These consist of providing a system of trenches and dug-outs both for preparing the grenades and for firing them.

4. Plate 45 shows the system of trenchwork which provides the greatest safety for live grenade work both rifle and hand. This trench system must be provided on all live grenade areas.

5. The plate actually shows a system with four bays for throwing hand grenades or firing rifle grenades. Only one man is allowed actually to throw or fire at a time, and the senior instructor controls all work from

2. It must be remembered, however, that a considerable amount of phosphorus is set loose from these grenades; this is liable to have serious effects on any animals which may graze on the ground when firing is not taking place.

3. The question of fire must also be considered. These grenades have a considerable incendiary effect, and they should not, therefore, be fired in the neighbourhood of heather or long grass, especially in summer time.

4. Particles of burning phosphorus may be thrown as much as 20 or 25 yards when the grenade bursts. Care must be taken, therefore, that they are not thrown close to any persons. This point should be specially watched when using smoke grenades on a battle practice range, and great care must be taken that no smoke grenade bursts directly in front of any occupied marker's shelter. If there is any possibility of this happening, shutters with small glass windows should be provided to close the front of the shelter pit.

CHAPTER VIII

BAYONET TRAINING COURSES

38. *General*

1. The quantities of timber, etc., required for bayonet training courses are given in Appendix VII. These stores will be issued free to regular units in the first instance by the R.E., the cost being debited against the general allotment made for R.E. work. Units will, however, be responsible for the upkeep of the apparatus out of allotments made to them for this purpose.

2. R.A.O.C. and R.A.S.C. stores, such as sacks, canvas, string, wire, straw, etc., are a free initial issue to units. The quantities authorized are shown in Appendix VI. Units are, however, responsible for upkeep of these stores out of the allotments made to them for the purpose.

3. Units will, in all cases, make their own arrangements for the construction of the apparatus in the first place from the stores issued to them and for its future maintenance.

4. On units changing stations, the outgoing unit is responsible for seeing that bayonet training courses are handed over in proper repair and complete, in accordance with the scale here laid down. For this purpose, these courses will on such occasions be inspected in accordance with King's Regulations, 1928, paras. 1277

et seq., and all breakages or deficiencies made good by the outgoing unit from the annual maintenance grant.

39. Apparatus for Preliminary Training

1. Plate 46 shows the wooden stand constructed to hold the sack, filled with straw, which is used (together with sacks on the ground) for the preliminary bayonet training.

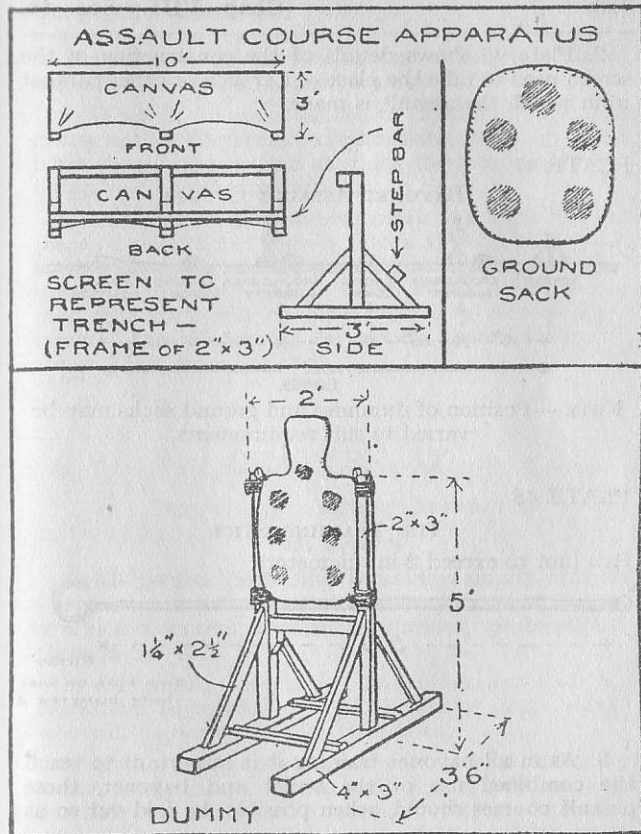
2. The stand is designed in place of the original pattern of gallows (with posts driven into the ground) in order that it can be used on the barrack square, in drill halls and other places where the gallows cannot be used. As the stand can be put away in store when not actually in use it can be preserved in good condition much longer than the gallows type.

3. The sacks should be kept tightly filled with straw and can be repaired by patching with canvas.

4. Plate 48 shows the training stick which is used for preliminary training. The pad should be made of strips of canvas and should not be larger than 2 inches in diameter. The ring and the pad should be secured to the stick with wire (see Appendix VI) and not fastened with pieces of tin or other metal.

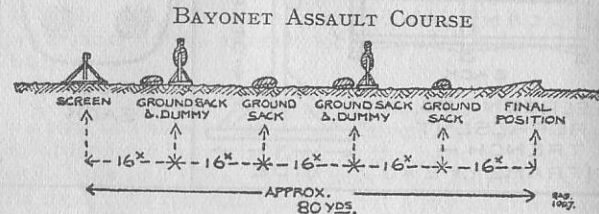
40. Assault Courses

1. Plate 47 shows how the stands and ground sacks described in the preceding section can be arranged to form an assault course for combined section or platoon training.



2. Plate 46 shows details of the construction of the screen used to take the place of a trench or other parapet from which the assault is made.

PLATE 47

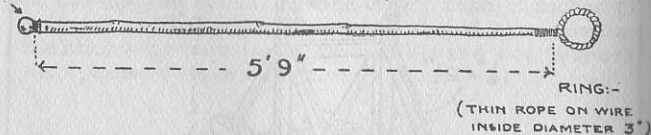


NOTE.—Position of dummies and ground sacks may be varied to suit requirements.

PLATE 48

THE TRAINING STICK

PAD (not to exceed 2-in. diameter)



3. As in all bayonet training it is important to teach the combined use of the bullet and bayonet, these assault courses should, when possible, be laid out so as

to finish on a 30-yards range or classification range where ball ammunition can be used.

4. When it is not possible to combine the assault course with a 30-yards or classification range, an aiming mark should be provided at which the men can fire with dummy or blank ammunition.

5. The best form of aiming mark is a cork or round piece of wood fitted loosely into a tin clip on top of a small picket, or placed at intervals along a narrow plank, supported at both ends. When blank cartridges are used, the cork will be blown out if a correct aim is taken. The rifle should be so held that the muzzle is about 2 feet from the cork.

CHAPTER IX

TARGETS AND TARGET APPARATUS

41. General

1. All targets (including those for aiming and drill purposes), range apparatus, and range stores, the issue of which is contemplated by regulations, will be supplied through the R.E.

2. All targets, telephones, and other movable W.D. stores will be handed over to the senior range warden, who will be responsible for their issue.

3. Units using rifle ranges will receive from, and return to, the range warden, daily, all targets and other movable stores required for firing.

4. The senior range warden will keep a record of all damage or loss, in order that the cost may be charged to individuals or units responsible. Fair wear and tear are excepted.

42. Targets and apparatus for preliminary training

1. The R.E. are responsible for issuing to units of the regular army a sufficient supply of targets, etc., for aiming and firing instruction, improvement of eyesight, judging distance, and fire control practices, carried out on the barrack square or other places excluding ranges wherever units may arrange to do this preliminary training.

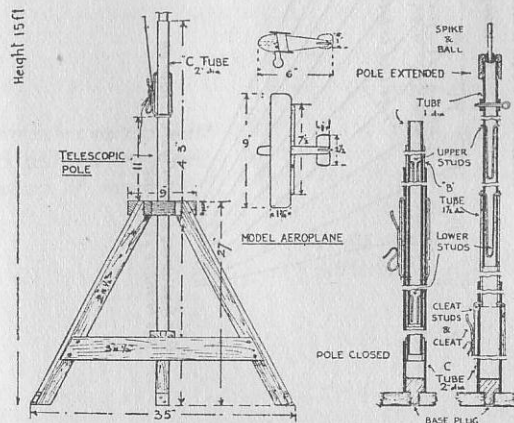
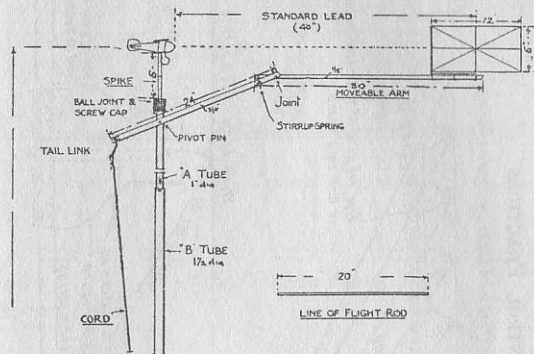
2. For Rifle practice the following targets will be provided :—

- i. Grouping targets (Plate 58) for use at 100 yards or under.
- ii. Small targets (4 foot) (Plate 57) for use between 150 and 450 yards.
- iii. Large targets (6 foot) (Plate 57) for use at 450 yards and over.
- iv. Silhouette targets up to 600 yards (as used in battle practices).
- v. Panels of landscape targets (*see* Sec. 47, 8 *et seq.*).
- vi. A.A. Model Aeroplane on Pole (Plate 49).

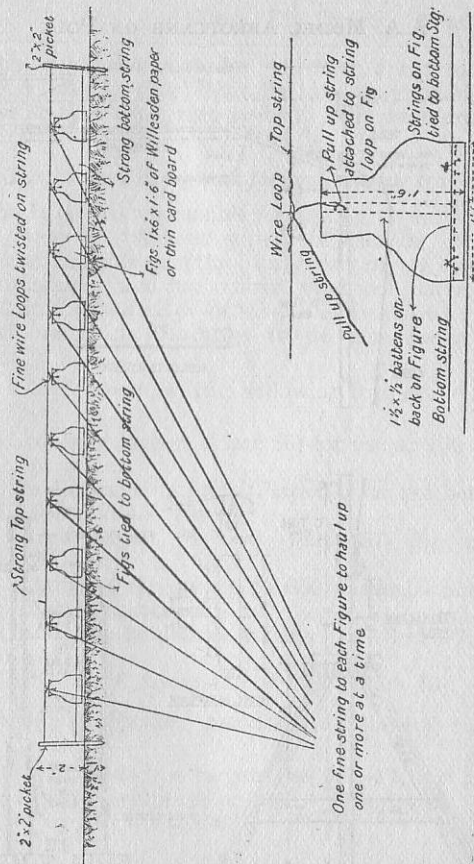
3. For light automatic practice the following targets will be provided :—

- i. Panels of landscape targets (*see* Sec. 47, 8 *et seq.*).
- ii. A.A. model aeroplane on pole. (Plate 49.)
- iii. A.A.1 target. (Plate 62.)

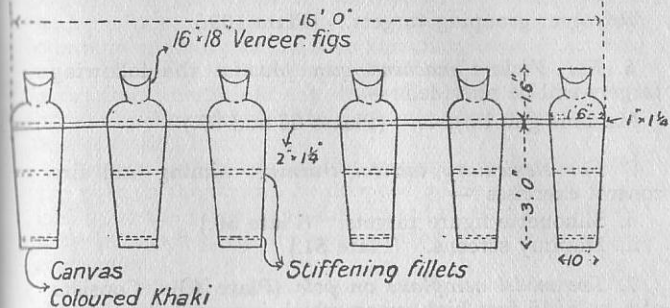
A.A. MODEL AEROPLANE ON POLE



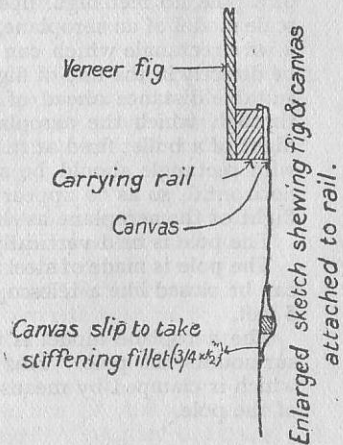
TARGET FOR FIRE CONTROL PRACTICES



DUMMY SCREENS FOR FIRE CONTROL PRACTICES



Wire frames covered with canvas & painted, may be used instead of veneer.



4. *For revolver practice* the following target will be provided :—

Revolver grouping targets. (Plate 109.)

5. *For Vickers machine gun practice* the following targets will be provided :—

Machine gun targets. (Plates 66 and 67.)

6. *For elementary tactical training*, aiming and fire control exercises :—

i. Silhouette figure targets. (Plate 50.)

ii. Dummy screens. (Plate 51.)

7. *The model aeroplane on pole* (Plate 49). Consists of a pole, 15 feet high, upon which is mounted a small scale model of an aeroplane, and a movable arm carrying a wire rectangle which can be placed so as to appear to be directly in the line of flight of the aeroplane, and at a suitable distance ahead of it to represent the distance through which the aeroplane would travel during the flight of a bullet fired at it. For crossing aeroplanes the wire rectangle should be slightly above or below the horizontal, so as to appear to coincide with the line of flight of the aeroplane as shown by the line of flight rod.

The pole is held vertically in a wooden stand.

The pole is made of steel tubes in three sections, which can be closed like a telescope to a length of a little over 5 feet.

The aeroplane model is impaled upon a spike which surmounts the pole. This spike is mounted on a ball which is clamped by means of a screwed cap to the top of the pole.

Thus the spike can be inclined at any angle within wide limits so that the model aeroplane may appear to be climbing or diving, or the aeroplane may be slewed round upon the spike so as to appear to be flying towards or away from the firer at any desired angle. The movable arm and rectangle when in use must always be at right angles to the firer.

The arm which carries the rectangle is pivoted upon the pole, so that it can be dropped while a rifle is being laid upon the target, and then raised so that the "lead" may be checked by comparison with the centre of the rectangle.

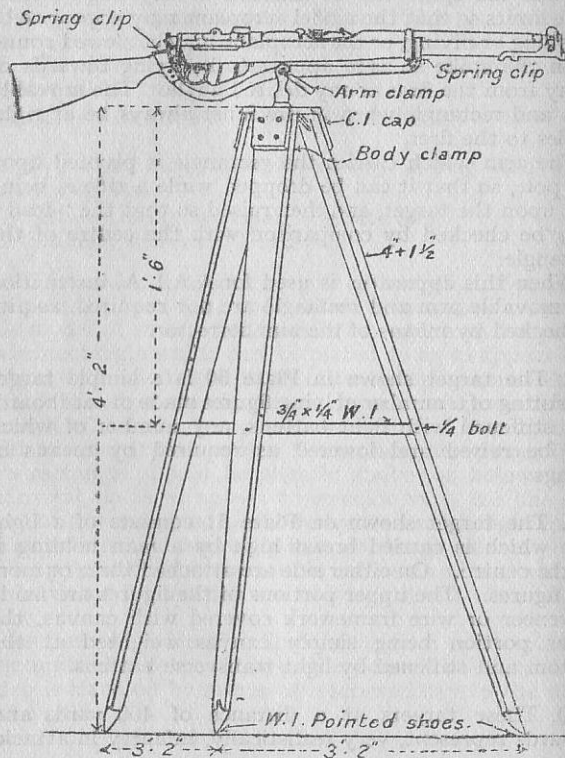
When this apparatus is used for A.A.L.A. instruction the movable arm and rectangle are not required, as aim is checked by means of the aim corrector.

8. The target shown in Plate 50 is a simple target consisting of a number of lying figures made of cardboard, and stiffened with light battens, any number of which can be raised and lowered as required by means of strings.

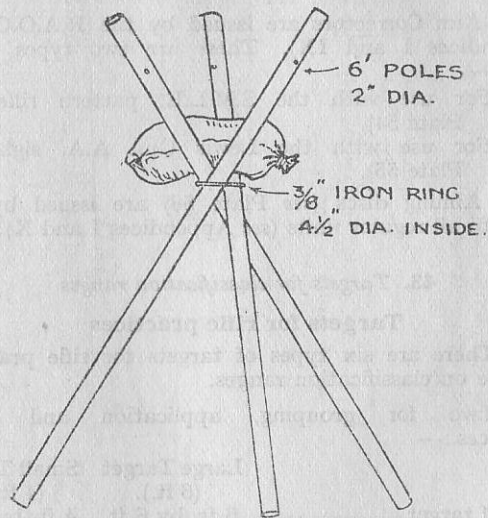
9. The target shown on Plate 51 consists of a light pole which is carried breast high by a man holding it by the centre. On either side are attached three or more full figures. The upper portions of the figures are made of veneer or wire framework covered with canvas, the lower portion being simply canvas weighted at the bottom and stiffened by light transverse battens.

10. These targets at a distance of 400 yards and upwards represent, very realistically, infantry in attack.

THE AIMING REST



THE TRIPOD REST With Sandbag in Position Ready for Use



The men with the targets lie down between the rushes, so that the prone figures only are visible.

11. The actual scale of issue of these targets is shown in Appendix I.

12. Aiming Rests (Plates 52 and 53) are issued by R.A.O.C. to units (*see* Appendices I and IX).

13. Aim Correctors are issued by the R.A.O.C. (*see* Appendices I and IX). There are two types available :—

- i. For use with the S.M.L.E. pattern rifle (*see* Plate 54).
- ii. For use with the Lewis Gun A.A. sight (*see* Plate 55).

14. Aiming discs (*see* Plate 56) are issued by the R.E. to all regular units (*see* Appendices I and X).

43. Targets for classification ranges

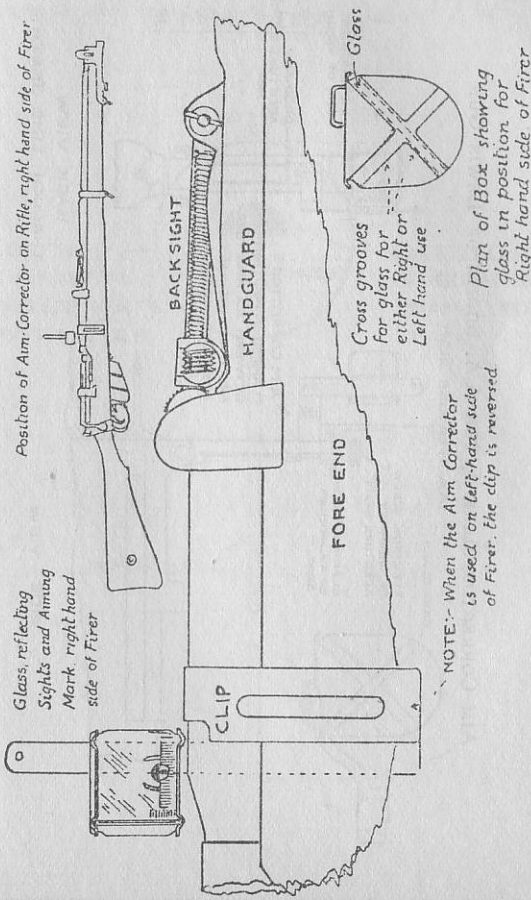
Targets for rifle practices

1. There are six types of targets for rifle practices for use on classification ranges.

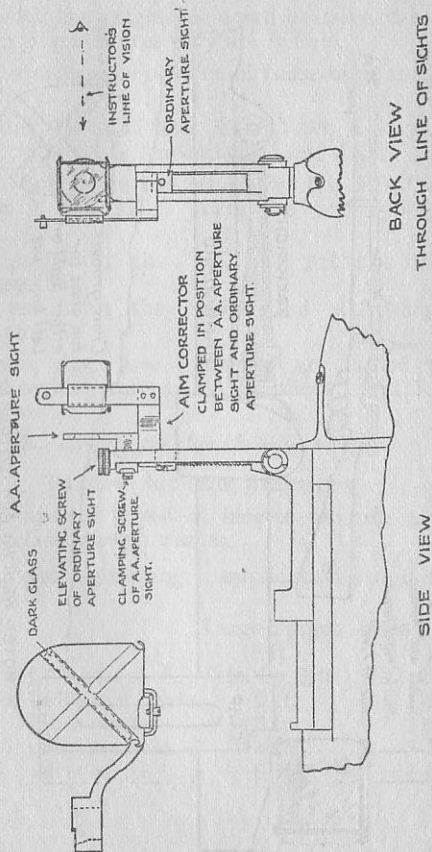
2. Two for grouping, application and rapid practices :—

		Large Target (6 ft.).	Small Target (4 ft.).
Size of target	...	6 ft. by 6 ft.	4 ft. by 4 ft.
Diameter of bull's-eye circle	...	2 ft.	1 ft.
„ inner circle	...	3 ft.	2 ft.
„ magpie circle...	...	4 ft.	3 ft.
„ outer circle	...	6 ft.	4 ft.

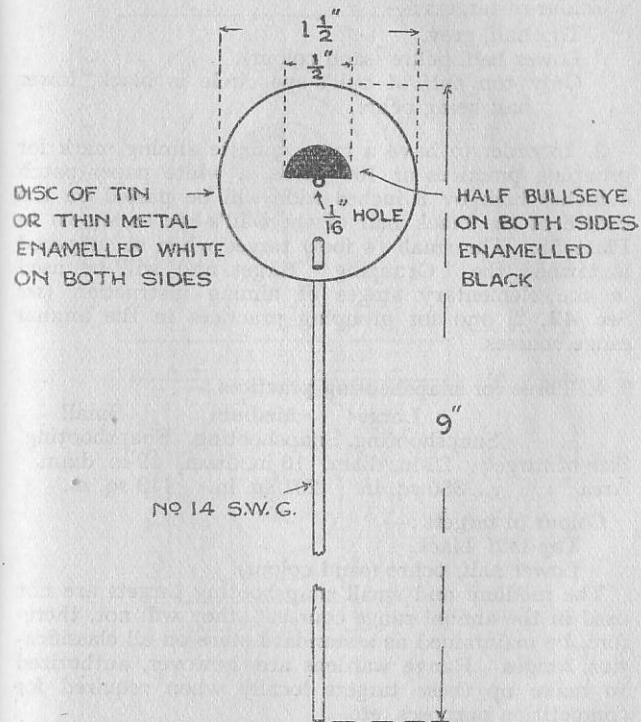
THE AIM CORRECTOR NO. 1, MARK II (S.M.L.E.)



AIM CORRECTOR MARK I, FOR A.A. SIGHTS OF LEWIS GUN



AIMING DISC.



Portions of target outside the outer circle do not count for scoring purposes.

Colour of targets :—

Top half, grey.

Lower half, ochre (sand colour).

Only top half of bull's-eye circle is black, lower half being ochre.

3. In order to have a more definite aiming mark for grouping practices at 100 yards, a white paper patch 4 inches high by 3 inches wide will be pasted on the centre of the black half of the bull's-eye as shown in Plate 58. The small (4 foot) target when so prepared is termed the "Grouping" target and will be used in the elementary stages of aiming instruction (*see* Sec. 42, 2) and for grouping practices in the annual range courses.

4. Three for snaphooting practices :—

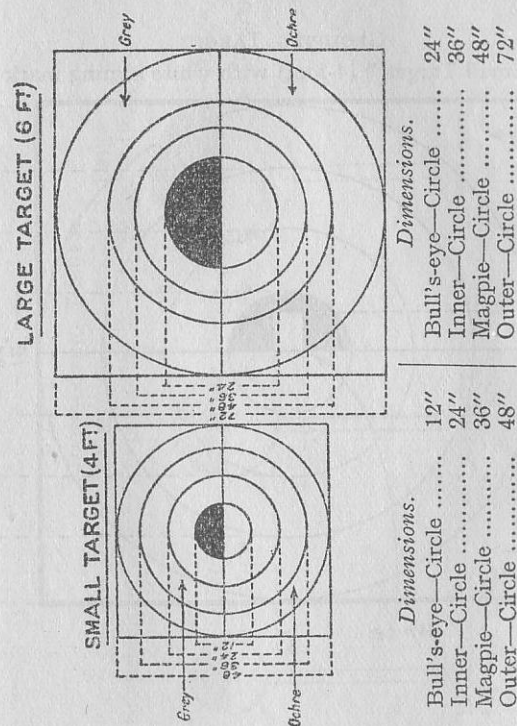
	Large	Medium	Small
Snaphooting.	Snaphooting.	Snaphooting.	Snaphooting.
Size of target	22-in. diam.	16-in. diam.	12-in. diam.
Area	... 380 sq. in.	201 sq. in.	113 sq. in.

Colour of targets :—

Top half, black.

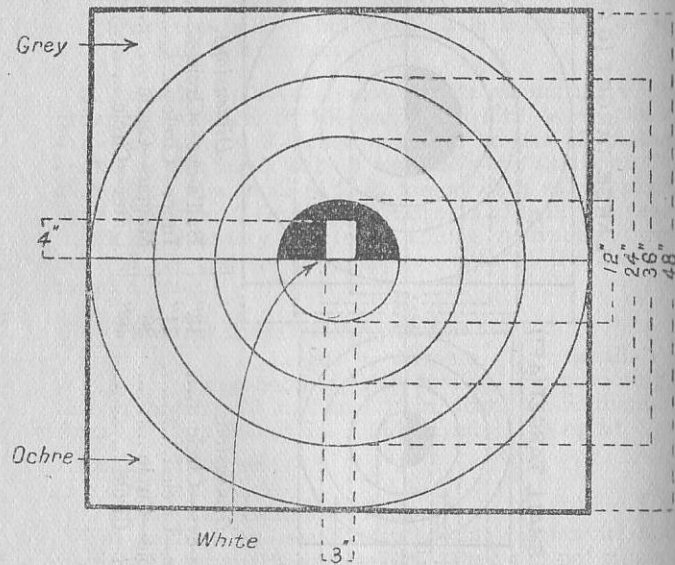
Lower half, ochre (sand colour).

The medium and small snaphooting targets are not used in the annual range courses; they will not, therefore, be maintained as a standard store on all classification ranges. Range wardens are, however, authorized to make up these targets locally when required for competition purposes, etc.

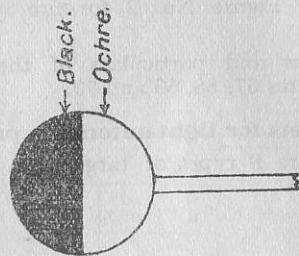


GROUPING TARGET

"Small Target" (4-foot) with white aiming mark

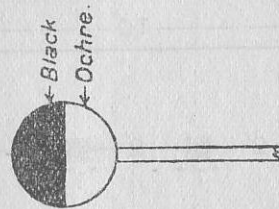


SNAPSHOOTING TARGETS
"Medium Snapshooting."



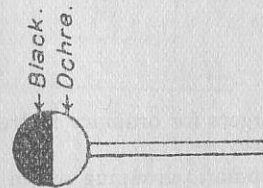
22" diameter.
380 sq. " area.

SNAPSHOOTING TARGETS
"Small Snapshooting."



16" diameter.
201 sq. " area.

"Small Snapshooting."



12" diameter.
113 sq. " area.

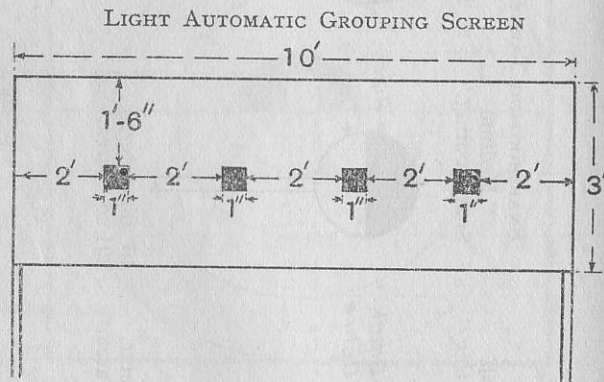
5. One (1) Figure No. 2 for fire with movement practices.

6. Diagrams and particulars of these targets are shown on Plates 57, 58, 59 and 73.

Targets for light automatic practices

7. There are 9 types of targets for light automatic practices.

PLATE 60



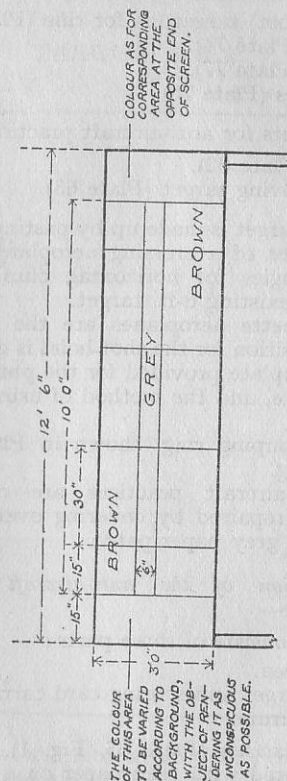
8. Seven targets for ordinary instructional and classification practices:—

Light automatic grouping screen (Plate 60).

The light automatic screen (Plate 61).

Small (4 foot) target (as for rifle (Plate 57)).

THE L.A. SCREEN



Large (6 foot) target (as for rifle (Plate 57)).
 Figure 3 (Plate 74).
 Figure 6 (Plate 77).
 Steel plates (Plate 78).

9. Two targets for anti-aircraft practices:—

A.A.1 (Plate 62).

A.A. moving target (Plate 65).

The A.A. 1 target is made up by pasting paper patches with silhouettes of a crossing aeroplane (Plate 63) at the correct angles for horizontal, climbing or diving flight, on any existing 6-ft. target.

These silhouette aeroplanes are the aiming marks. The correct position for the shot holes is gauged by using the special template provided for the purpose.

This template, and the method of using it, are shown on Plate 64.

The rifle grouping ring, shown in Plate 72, will be used for scoring.

When anti-aircraft practices are completed, the target will be repaired by covering over the aeroplane patches with a grey paper patch.

10. *Description of the anti-aircraft moving target* (Plate 65).—

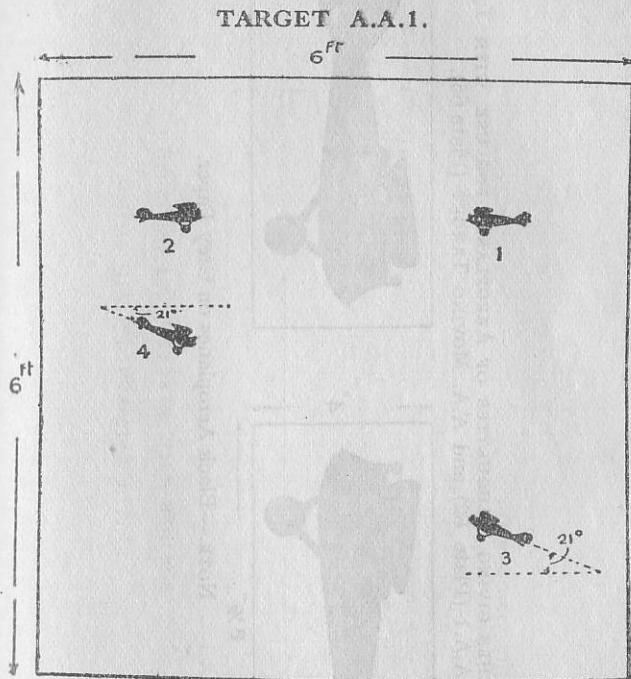
The target consists of three parts:—

Fixed screen.

Moving target and scoring card carrier.

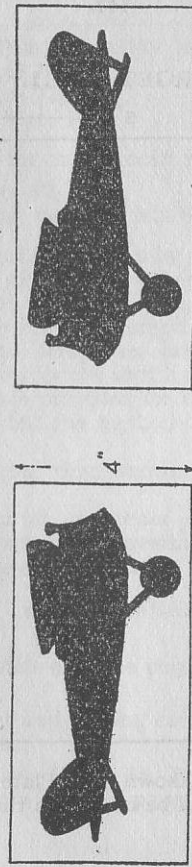
Winding drum.

i. *The fixed screen* (Plate 65, Fig. 1).—This is made of canvas covered with grey paper on a wooden frame—

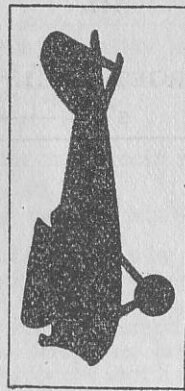


NOTE.—Template as shown on Plate 64 for correct position of group, will be used with this target.

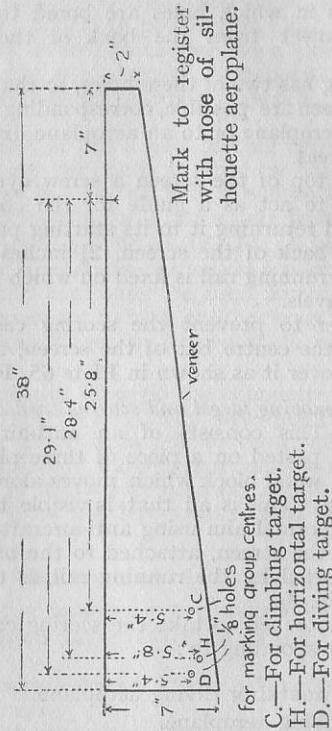
PAPER PATCHES GIVING SILHOUETTES OF AEROPLANES FOR USE WITH TARGET A.A.1 (Plate 62) and A.A. MOVING TARGET (Plate 65).



NOTE.—Black Aeroplanes on Grey Paper.



TEMPLATE FOR LEWIS GUNS
FOR USE WITH TARGET A.A.1 (Plate 62)



work 14 feet long and 3 feet high. It is attached to two 10-ft. legs in which holes are bored to take the bolts which project from the back of the screen frame-work.

Each leg has two of these holes, so that three positions of the screen are possible, corresponding to a horizontal crossing aeroplane or to an aeroplane diving or climbing, at 21 degrees.

On the top of the screen a screw eye is provided at each end to act as a guide for the cords moving the target and returning it to its starting point.

At the back of the screen, $2\frac{1}{4}$ inches below the top, a wooden running rail is fixed on which the scoring card carrier travels.

In order to prevent the scoring card carrier from touching the centre bar of the screen, a piece of paper is pasted over it as shown in Plate 65, Fig. 2.

ii. *The moving target and scoring card carrier* (Plate 65, Fig. 3).—This consists of an anti-aircraft silhouette (Plate 63) pasted on a piece of three ply, and attached to a hard wood block which moves along the top bar of the screen. This is all that is visible to the firer, who takes the normal aim using anti-aircraft sights.

Behind the screen, attached to the hard wood block, and supported by the running rail, is the scoring card carrier (Fig. 3).

This is notched to take the scoring card in two positions, corresponding to:—

- (a) Horizontal or diving aeroplane.
- (b) Climbing aeroplane.

The legs carrying the scoring card are made of three ply, and the card is held in position by clips, also made of three ply, and secured to the legs by a rivet.

The scoring card is a sheet of strawboard $23" \times 12\frac{1}{2}"$ on which is pasted a paper printed with scoring rectangles and the M.P.I.

After each burst of fire a new scoring card is placed in position, and the old one is patched by having a new paper pasted over it. In this way it will be found that one strawboard mounting will last a long time.

iii. *The winding drum* (Plate 65, Fig. 4).—This is a drum 8 inches in diameter mounted on a post.

Any strong fine cord may be used for moving the target. It is convenient to have another length attached to the rear of the target to return it to its starting position.

iv. Where shown in Plate 65 the silhouette aeroplane is moving from right to left. For those practices where the target must move from left to right, another silhouette on a different moving bar and scoring card carrier is placed in the correct position, and the winding drum is moved from the left to the right side of the firer.

Targets for Vickers machine gun practices

11. There are five targets for machine gun practices:—

- i. Machine gun target (Plate 66) for use at 25 yards range.
- ii. M.G. stoppage target (Plate 67) for use at 25 yards range.
- iii. Large (6-foot) target (Plate 57). For Part II of the annual M.G. course.

THE "A.A." MOVING TARGET

Fig 1.—The fixed screen

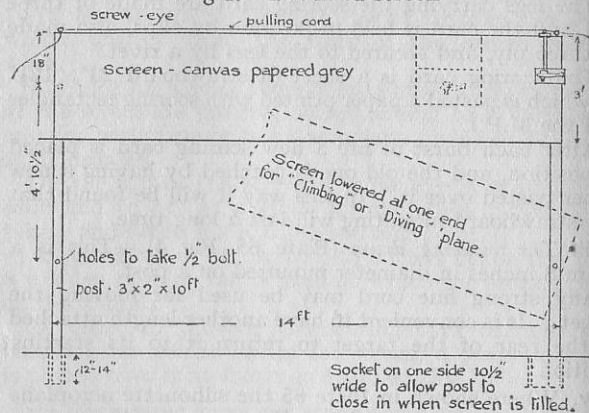


Fig. 2

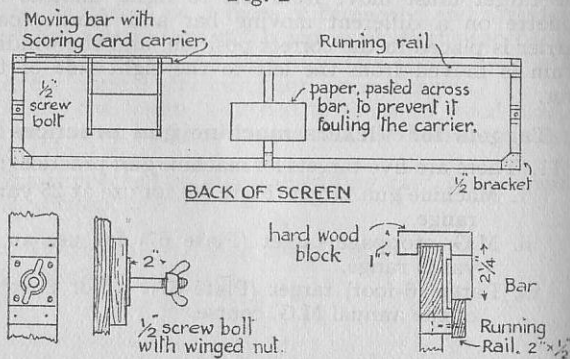


Fig. 3.—MOVING BAR AND SCORING CARD CARRIER

SHOWN FOR RIGHT TO LEFT MOVEMENT (VIEWED FROM BEHIND)

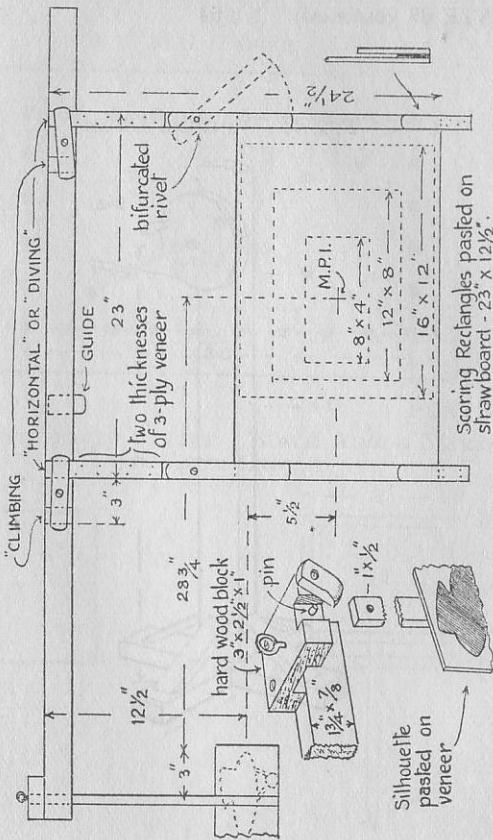


FIG. 4.—WINDING DRUM

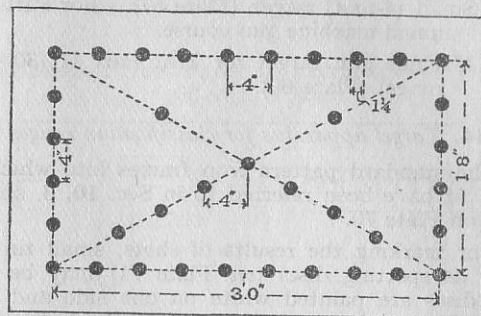
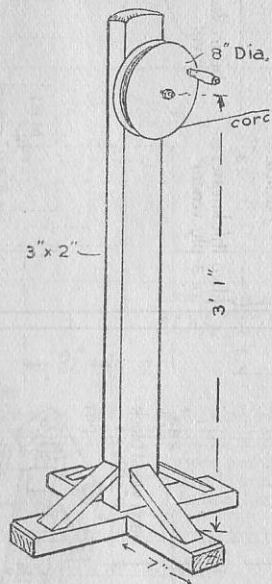
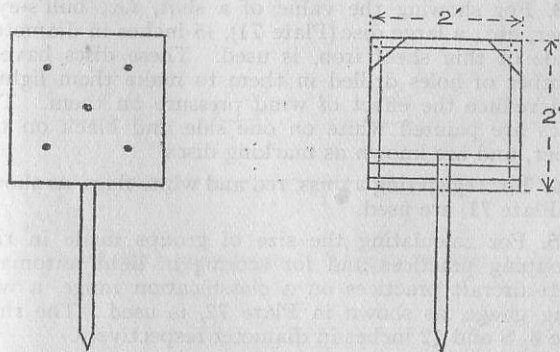


PLATE 67

M.G. STOPPAGES TARGET. BLACK AIMING MARKS
ON WHITE GROUND



FRONT

BACK

iv. Small (4-foot) target (Plate 57). For Part II of annual machine gun course.

v. Machine gun target for T.A. Part II (30 yards range) (Plate 69).

44. Target apparatus for classification ranges

1. The standard pattern iron frames into which the targets fit have been referred to in Sec. 10, 3, and are shown on Plate 70.

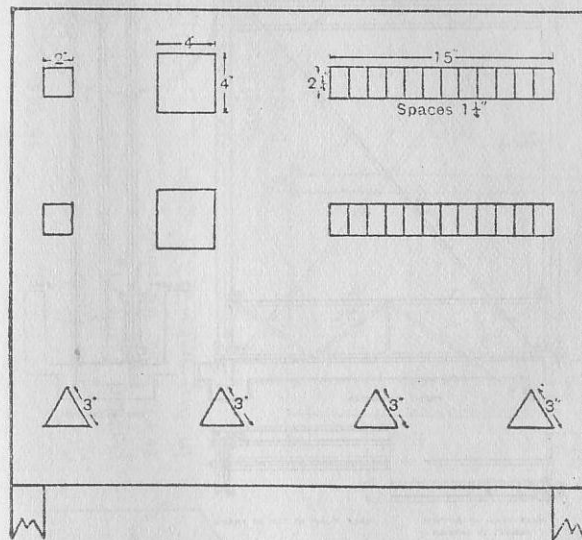
2. For marking the results of shots, small tin discs known as spotting discs (*see* Plate 71) may be used. These discs are painted white on one side and black on the other and are placed in the actual shot holes. They are made in two sizes: 2 inches square for use up to 200 yards range, and 4 inches square for use at longer ranges.

3. For showing the value of a shot, *i.e.*, bull's-eye, inner, etc., a large disc (Plate 71), 15 inches in diameter, made of thin sheet iron, is used. These discs have a number of holes drilled in them to make them lighter and reduce the effect of wind pressure on them. The discs are painted white on one side and black on the other, and are known as marking discs.

4. For registering a miss, red and white flags, as shown in Plate 71, are used.

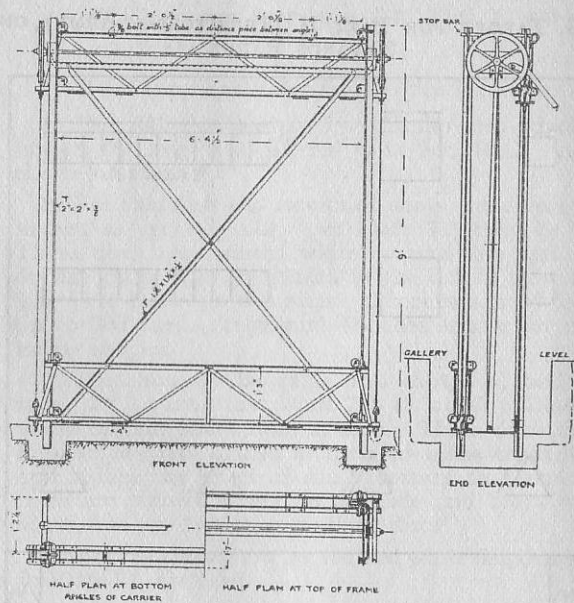
5. For calculating the size of groups made in rifle grouping practices and for scoring in light automatic anti-aircraft practices on a classification range, a wire ring gauge, as shown in Plate 72, is used. The rings are 4, 8 and 12 inches in diameter respectively.

M.G. TARGET FOR PART II (TERRITORIAL ARMY) ON 30-YARDS RANGE

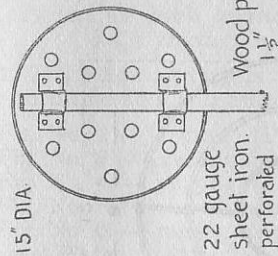


Faced with grey paper. Targets of brown paper.

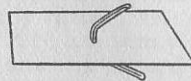
TARGET FRAME—"HYTHE" PATTERN



MARKING DISC

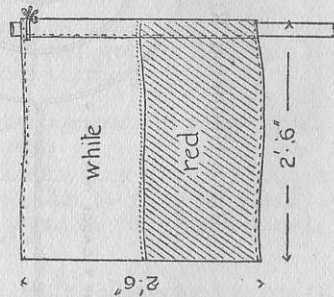


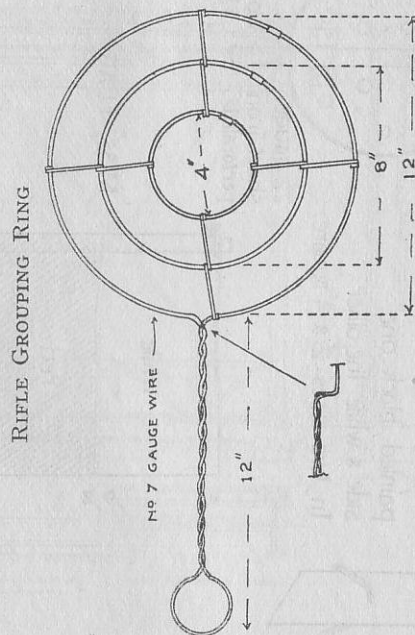
SPOTTING DISC.
painted black one
side & white the other
In two sizes. 2' & 4' square.



Hook of
doubled
brass wire.

MISS FLAG





45. Targets for battle practice ranges and for individual battle practices on classification ranges

1. The following targets are used for battle practices for both rifle and light automatic work:—

- Fig. No. 2.— $\frac{3}{4}$ figure. (Plate 73.)
- Fig. No. 3.—Kneeling figure. (Plate 74.)
- Fig. No. 4.—Lying figure. (Plate 75.)
- Fig. No. 5.—Covered figure. (Plate 76.)
- Fig. No. 6.—Crossing man. (Plate 77.)
- Steel Plates. (Plate 78.)

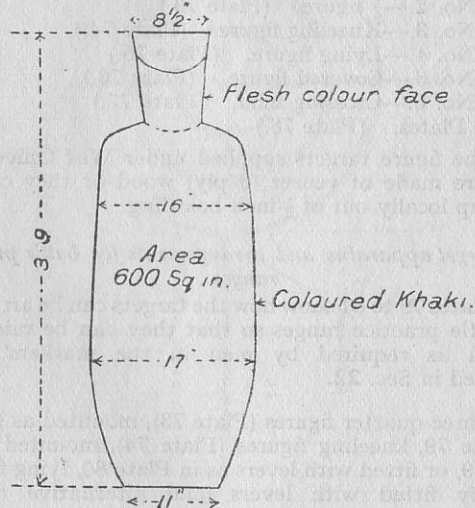
2. The figure targets supplied under War Office contract are made of veneer (3 ply) wood or they can be made up locally out of $\frac{1}{2}$ -inch boarding.

46. Target apparatus and arrangements for battle practice ranges

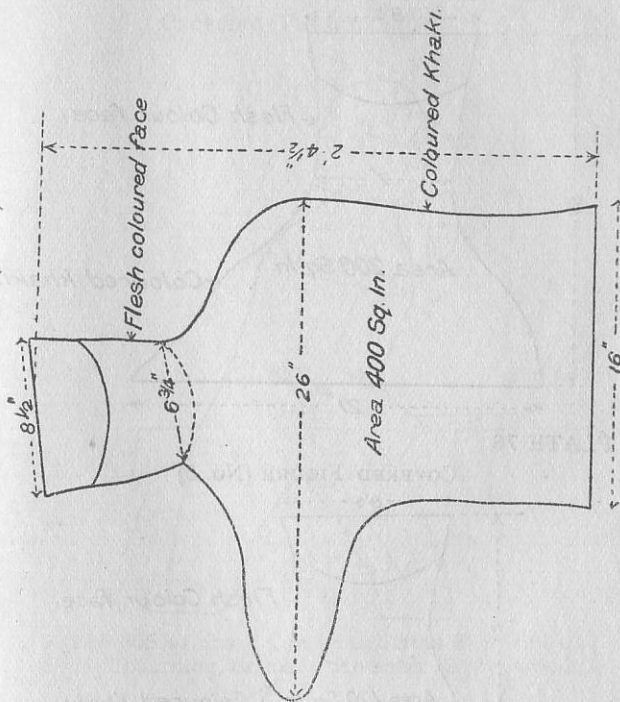
1. Plates 79 to 81 show how the targets can be arranged on battle practice ranges so that they can be raised or lowered as required by men in the markers' pits, described in Sec. 22.

2. Three-quarter figures (Plate 73), mounted as shown in Plate 79, kneeling figures (Plate 74), mounted as in Plate 79, or fitted with levers as in Plate 80, lying figures similarly fitted with levers, and alternative figures (Plate 81), are suitable for more advanced battle practices, and can be used to represent an enemy appearing from behind cover, advancing or retreating. The method employed in the latter case is to set up lines of the three-quarter figures at different distances. To represent an advancing enemy, the targets furthest

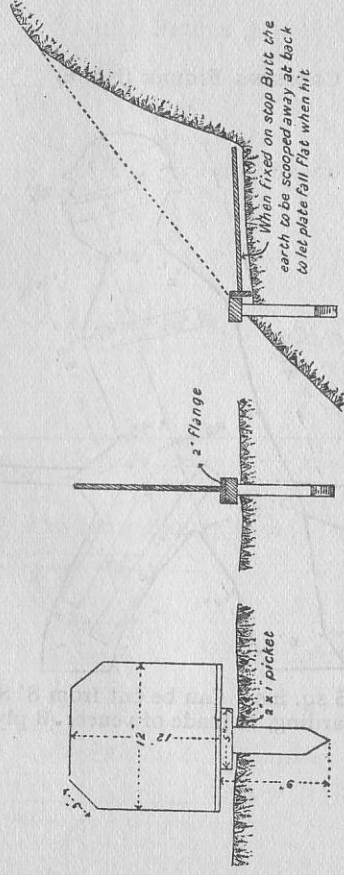
$\frac{3}{4}$ FIGURE (No. 2)



KNEELING FIGURE (No. 3)

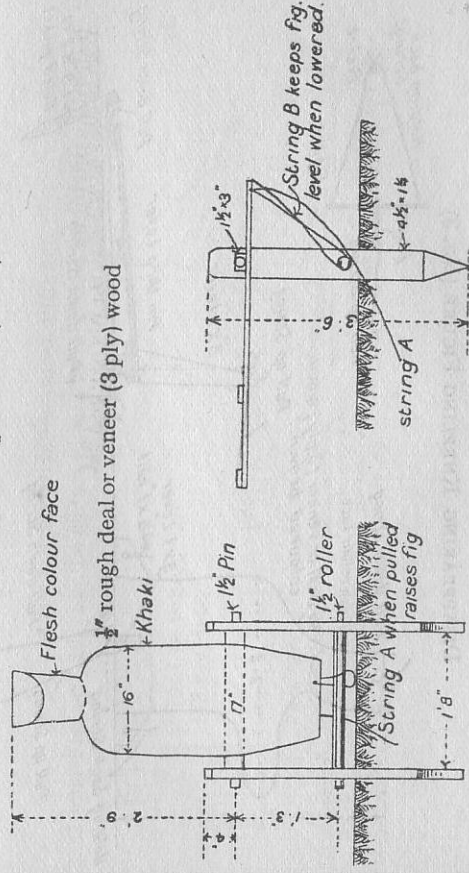


FALLING STEEL TARGET FOR BATTLE PRACTICES

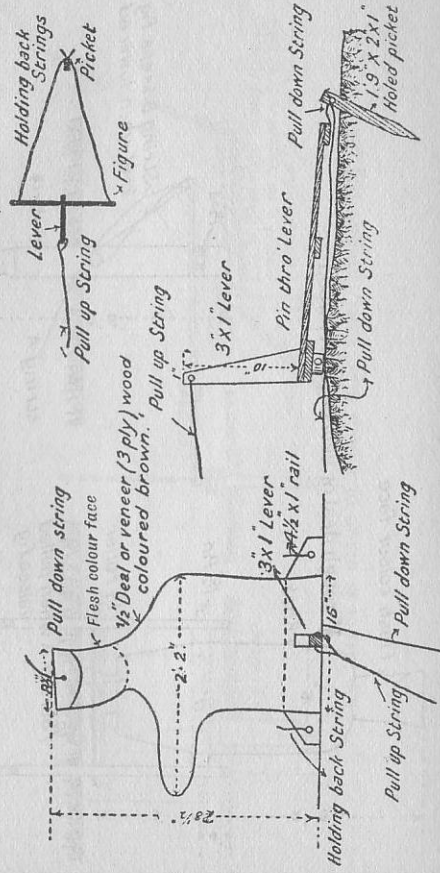


This target is made of $\frac{3}{8}$ -inch mild steel, weight $16\frac{1}{2}$ lbs.

DISAPPEARING $\frac{3}{4}$ FIGURE (No. 2)

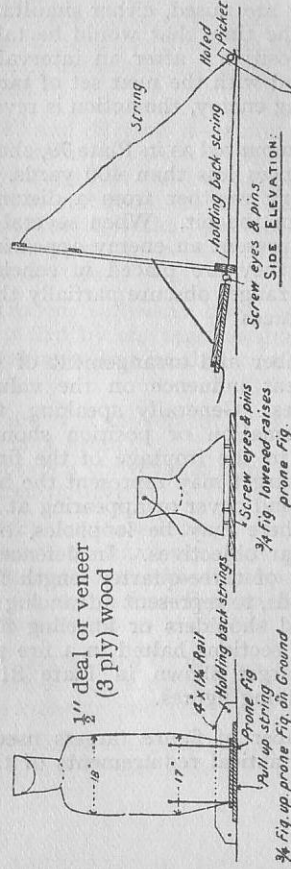


DISAPPEARING KNEELING FIGURE (No. 3)



ALTERNATIVE DISAPPEARING FIGURES

Lying Fig. or 1/4 Fig. can be shown at will to represent an infantry attack



from the firers are raised, either simultaneously or man by man, for the time that would be taken to advance to the next position; after an interval the procedure is then repeated with the next set of targets and so on. For a retreating enemy, the action is reversed.

3. Figures, mounted as in Plate 79, should not be fired upon at distances less than 400 yards. They may be operated in dry weather from a distance as great as 300 yards from the pit. When several sets of targets are used to represent an enemy appearing from behind cover, unless they are placed in echelon, the legs of those at short ranges obscure partially the view of those at longer distances.

4. The number and arrangement of the targets will exercise a great influence on the value of collective battle practices. Generally speaking, the frontage of the target formation or position should be approximately equal to the frontage of the firers; in attack practices the target may represent the heads of defending troops behind cover or appearing at intervals above a parapet; there may be loopholes, bushes, machine guns, or similar objectives. In defence practices they should consist of three-quarter length figures, exposed for short periods, to represent advancing enemy sections, and heads and shoulders or kneeling figures to represent the same sections halted in a fire position or long grass. The target shown in Plate 81 combines the standing and lying figures.

5. The number of figure targets used should correspond to the tactical requirements of the scheme. In

attack practices the figure targets representing defenders may be fewer in numbers than the firers. The targets should generally represent a section, platoon, or other recognized unit.

6. Plates 82 and 83 show a form of trolley which can be used for targets advancing, retiring, or moving to a flank. The length of the bar supporting the targets can be varied to suit requirements, but 20 feet is about the maximum length which can be used on any one trolley. The targets can be spaced on the bar at any required distance apart.

7. These trolleys will work over quite rough ground and can be pulled by one man on grass. They can be moved over shingle, but in that case require two men to pull them.

8. To get an even movement it is best to wind the hauling rope on a drum.

Plate 84 shows a convenient form of drum for either one or two men to work.

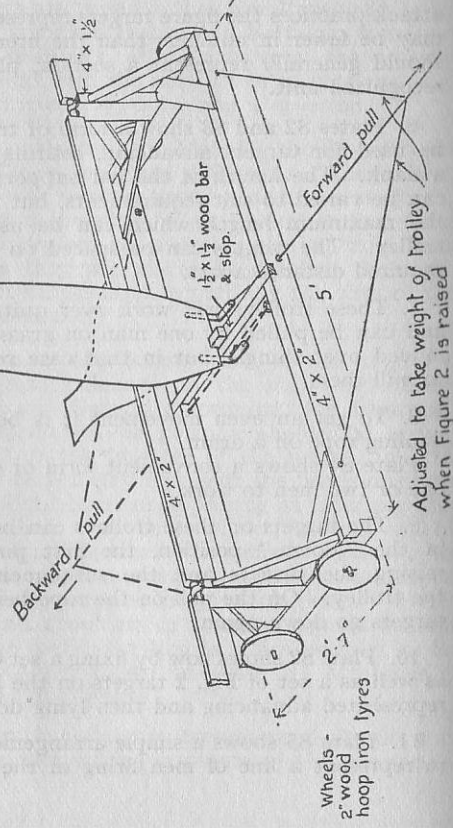
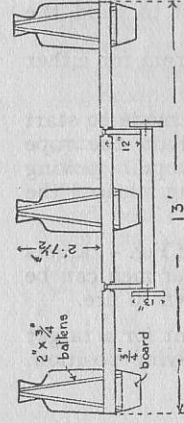
9. The targets on these trolleys can be made to start in the "down" position, the first pull on the rope raising the targets and the subsequent pull moving the trolley. On the pull on the rope being released the targets go down again.

10. Plate 82 shows how by fixing a set of Fig. 4 targets as well as a set of Fig. 2 targets on the bar men can be represented advancing and then lying down to fire.

11. Plate 85 shows a simple arrangement for a target to represent a line of men firing in the lying position.

TROLLEY FOR ADVANCING AND RETIRING TARGETS

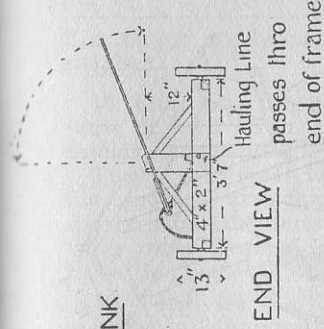
(Figs. 2 and 4 appear alternately)



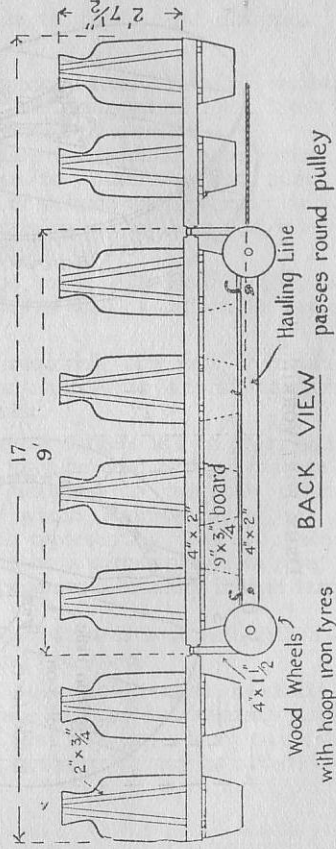
Wheels -
2" wood
hoop iron tyres

TROLLEY

- FOR TARGETS MOVING TO A FLANK
(Targets appear and disappear.)

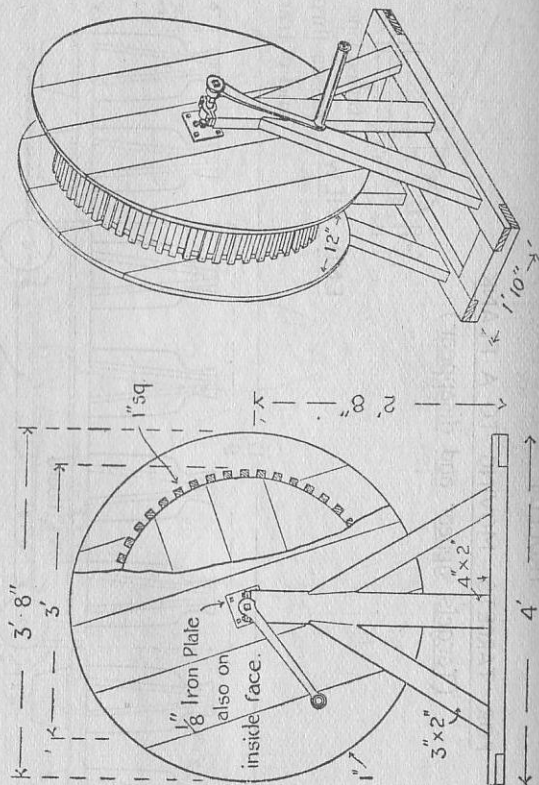


END VIEW



BACK VIEW

DRUM FOR WORKING TROLLEYS



The target can be made to appear and disappear as required.

12. Collapsible targets are of steel (Plate 78), earthenware, or light material held in position by a latch or similar contrivance till struck by a bullet.

They are of great value for teaching observation of fire, showing time taken to obtain the first effective shot, comparative tests of volume and accuracy, and in many other forms of training. They also add interest to battle practices.

13. Their use can be much extended if they are mounted as disappearing as well as collapsible targets (Plate 86).

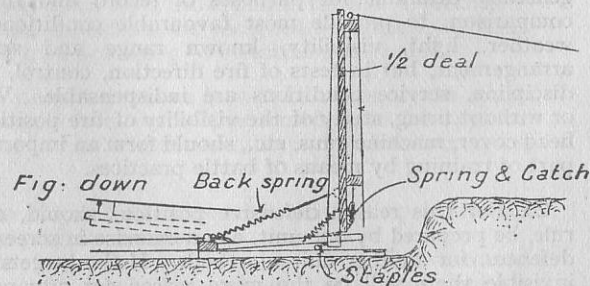
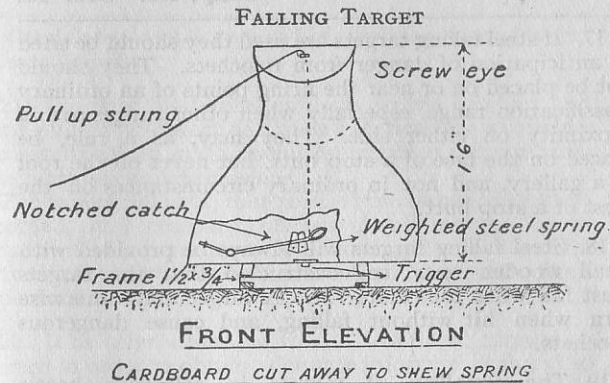
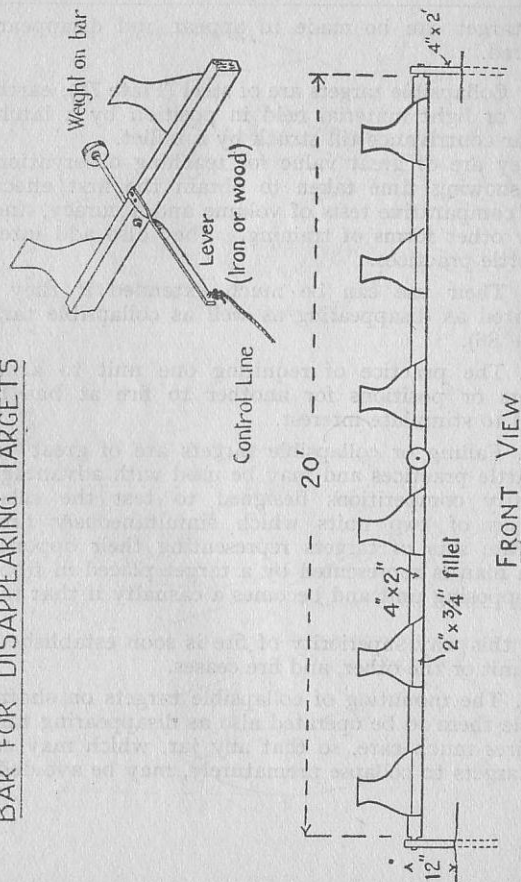
14. The practice of requiring one unit to arrange targets or positions for another to fire at has been found to stimulate interest.

15. Falling or collapsible targets are of great value in battle practices and may be used with advantage in casualty competitions designed to test the relative abilities of two units which simultaneously fire at separate sets of targets representing their opponents. Each man is represented by a target placed in front of the opposing unit and becomes a casualty if that target falls.

In this way superiority of fire is soon established by one unit or the other, and fire ceases.

16. The mounting of collapsible targets on shafts to enable them to be operated also as disappearing targets requires much care, so that any jar, which may cause the targets to collapse prematurely, may be avoided.

BAR FOR DISAPPEARING TARGETS



SIDE ELEVATION

Scale $\frac{1}{16}$

17. If steel falling targets are used they should be sited in anticipation of danger from ricochets. They should not be placed on or near the firing points of an ordinary classification range, especially when other ranges are in proximity on either side. They may, as a rule, be placed on the face of a stop butt, but never on the roof of a gallery, and not in ordinary circumstances on the crest of a stop butt.

18. Steel falling targets will always be provided with small wooden rests, so constructed that the targets must fall when hit (Plate 78). A target may otherwise turn when hit without falling, and cause dangerous ricochets.

19. The visibility of targets in collective battle practices must not be exaggerated; it is the void of the battlefield which causes the greatest difficulties in fire direction. In tests of fire effect or vulnerability, it is generally desirable for purposes of record and future comparison, to provide most favourable conditions of weather, light, visibility, known range and ample arrangement, but in tests of fire direction, control, and discipline, service conditions are indispensable. With or without firing, study of the visibility of fire positions, head cover, machine guns, etc., should form an important part of training by means of battle practices.

20. For this reason defensive positions should, as a rule, be prepared by one unit, as an exercise in screening defences, for another unit to attack. If the targets are invisible there will be the more reason for advancing under covering fire to a position whence the targets can

be clearly seen, and fire opened in conditions more favourable to fire effect.

21. Provided that full details as to the conduct and arrangement of collective battle practices are available, the results afford much useful information for comparative purposes and discussions.

The superficial area, therefore, of the targets should be recorded, and company officers should always be in possession of a descriptive list, showing the number and nature of targets available for their use, with their superficial area.

22. It is often desirable to use additional targets or screens in order to obtain adequate information as to the position of the nucleus of the fire cone with reference to the point of aim; in this case the additional targets may be regarded as bullet catchers and should not be exposed to view; the number of hits obtained on them would be recorded apart from those on the tactical objective.

Ricochets should also be recorded separately, as their number varies according to conditions of ground.

23. In deep formations it will be necessary to space sets of targets from each other according to the angle of descent of the bullets, so that direct double hits may be avoided.

24. Rectangular canvas screens should be provided on all battle practice ranges.

Screens for collective grouping tests, fire direction practices, etc., should be made of canvas stretched on battens. They should be one yard high and made in

lengths of 10 feet. There should be sufficient screens to form three rows, each 40 feet in length.

25. Figure targets are, as a rule, made of wood or cardboard; figure-shaped tiles, made at small cost for competitions, pool shooting, etc., are safe and useful collapsible targets; numerous patterns of collapsible targets depending on the action of springs and catches are available, and disappearing targets, operated by electricity, are very useful on ranges insufficiently provided with markers' pits, as a means of meeting difficulties when markers are scarce.

26. Mirrors may be arranged to represent the flash of field guns.

27. Special targets should also be constructed of wood to represent field guns, machine guns, mounted figures, etc.

28. In Appendices III, IX and X is a list of targets and appliances which on demand should be provided on ranges used for battle practices for trained soldiers.

47. *Representative targets for 30-yards ranges and miniature ranges*

1. The targets for 30-yards ranges and miniature ranges are similar to those used on the classification and battle practice ranges reduced to the correct scale and modified for use with .303-inch ammunition. On targets for use with both .22-inch and .303-inch ammunition, the aiming mark has been lowered in accordance with Sec. 5, Vol. IV, 1931. The scoring surfaces, however, remain

unchanged. When these targets are used with .22-inch ammunition, the sights of the rifle should be adjusted to the proper elevation.

2. It is obviously impossible to provide miniature range targets reduced to scale for every distance on the full-sized ranges, and the targets detailed in the following paragraphs have been selected as the targets authorized for issue by the R.E. for regular forces or through County Associations for the Territorial Army. These targets will be found to meet all ordinary requirements.

Where a range of 15 yards or less has been constructed, the provision of specially reduced targets will be the responsibility of the users of the range in question.

Targets for preliminary practices

3. Targets for elementary practice and practices similar to those on open classification ranges are as follows:—

Small target (4 ft.)	...	...	200 yds.—20 yds. 200 yds.—25 yds. 200 yds.—30 yds.
Large target (6 ft.)	...	...	500 yds.—20 yds. 500 yds.—25 yds. 500 yds.—30 yds.
Large and small snapshooting	...	...	100 yds.—20 yds. 200 yds.—20 yds.
Large and small snapshooting	...	...	100 yds.—25 yds. 200 yds.—25 yds.
Large snapshooting	...	...	300 yds.—25 yds. 200 yds.—30 yds. 300 yds.—30 yds.

N

Targets for battle practices

4. Targets for battle practices are as follows:—

Fig. 1, khaki	1,000 yds.	} For 25-yards range.
	800 yds.	
	600 yds.	
	500 yds.	
	400 yds.	
Fig. 3, khaki	600 yds.	
	400 yds.	
	300 yds.	
	200 yds.	
Fig. 4, khaki	400 yds.	
	300 yds.	
	200 yds.	
Fig. 6, khaki	500 yds.	
	400 yds.	
Crossing cavalryman, khaki ...	1,000 yds.	
	800 yds.	
	600 yds.	
Advancing cavalryman, khaki	1,000 yds.	
	800 yds.	
	600 yds.	
M.G. in action, khaki ...	500 yds.	
	300 yds.	
Infantry section extended ...	1,500 yds.	

Figures, cardboard, crossing man } For 30-yards ranges
Figures, cardboard, disappearing } with 303-inch.

5. Figs. 2 and 5 have been omitted, as these can be very easily made by simply cutting off the bottom

portions of Figs. 1 or 4. Similarly, targets for intermediate 100-yards ranges can be made if required, by cutting round the edge of the nearest larger-sized target.

6. Only khaki targets are supplied, as it is very easy for units to colour these targets to any other colour they wish, if they consider it necessary to do so, *e.g.*, when teaching visual training on landscape targets.

7. In order to ascertain the correct reduced size of any target, multiply the size of the full-sized target by the distance in yards at which the larger will be used, and divide by the number of yards distance the target is supposed to represent, *e.g.*, a large (6-foot) target at 500 yards is represented at a range of 25 yards by a target $\frac{72 \times 25}{500}$ inches = 3.6 inches square.

Paper landscape targets

8. These targets are used on both 30-yards and miniature ranges to practise the rapid indication and recognition of targets, rapid and accurate adjustment of sights, collective fire, choice of targets for individual fire and use of field glasses. They should be placed 25 yards from the firing point (*see* Plate 19 for correct position on 30-yards ranges).

9. They consist of a series of printed-coloured landscapes of ordinary country in different parts of the world. The following scenes have been officially approved:—

- 5 panels of British scenery.
- 3 panels of Belgian scenery.
- 3 panels of Indian scenery.
- 2 panels of devastated areas.

10. Each panel is 5 feet long by 2 feet high, and units should paste two panels on to canvas and wooden screens to make a picture 10 feet long.

11. In order to save expense when shooting at these targets the sights of the rifles should be so harmonized that the bullets will hit a white and brown paper screen, 5 feet wide by 3 feet high, placed immediately above the landscape targets. These screens should be so constructed that they are separate from the picture landscape targets, and consequently the latter can be changed as required.

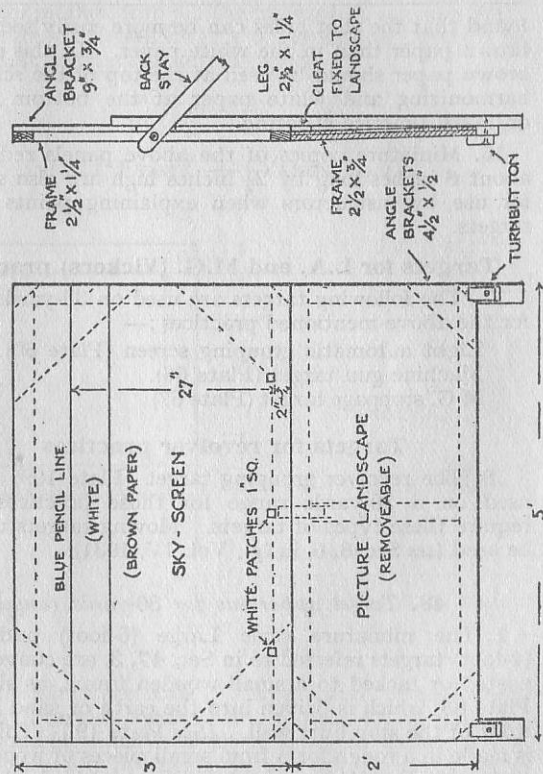
12. Plate 87 shows this sky screen and detachable landscape target below it.

13. The sights of the rifles to be used for shooting at these landscape targets will be first harmonized, so that when the rifle is aimed at the white patches at the bottom of the sky screen, the shot hits the blue pencil line, which is 27 inches above the bottom of the white patches on the white portion of the sky screen. When the sights have been so harmonized the shots from rifles aimed at the picture landscape will hit the brown portion of the sky screen.

14. White paper is used for the top portion of the sky screen so that the shot holes can be seen when harmonizing the sights. Brown paper is used for the remainder of the sky screen so as to prevent the firers from seeing the shot holes and aiming at a group of shots instead of at the correct object on the landscape picture.

15. In the case of outdoor ranges, if the range is so sited that the sun is usually behind the targets, it may be

LANDSCAPE TARGETS
SKY-SCREEN FRAME WITH DETACHABLE PICTURE
To be Used in Pairs



found that the shot holes can be more easily seen in the brown paper than in the white paper. In this case the brown paper should be used at the top of the screen for harmonizing and white paper at the bottom for the ordinary practice shooting.

16. Miniature copies of the above panels reduced to about 6 inches long by $2\frac{1}{2}$ inches high are also supplied for use by instructors when explaining points on the targets.

Targets for L.A. and M.G. (Vickers) practices

17. The following targets are used on 30-yards ranges for the above-mentioned practices :—

Light automatic grouping screen (Plate 60).

Machine gun target (Plate 66).

M.G. stoppage target (Plate 67).

Targets for revolver practices

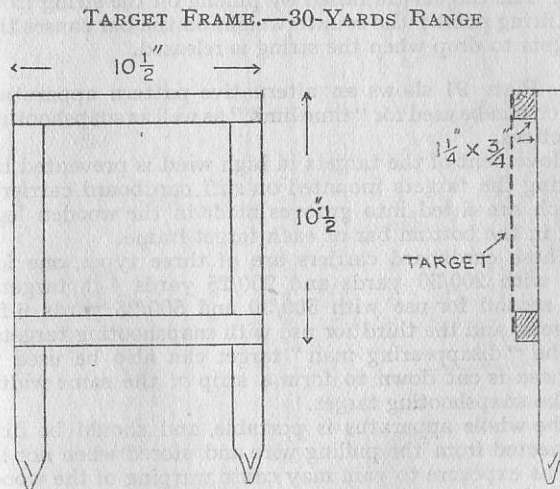
18. The revolver grouping target (Plate 109) may be used on a 30-yards range for those practices which require these types of targets. Moving targets may not be used (*see* Sec. 8, 6, iii (g), Vol. IV, 1931).

48. Target apparatus for 30-yards ranges

1. The miniature scale Large (6-foot) and Small (4-foot) targets referred to in Sec. 47, 3, are conveniently pasted or tacked to a small wooden frame, as shown in Plate 88, which is driven into the earth or sand bank in front of the stop butt wall. (*See* Plate 19.) This frame is made in a rough form from small pieces of wood and is easy and cheap to renew when damaged by bullets.

Another method is to pin the targets to a canvas screen. A screen about 10 feet long by 3 feet high will usually be found most convenient for this purpose.

PLATE 88



2. The miniature scale "Large" and "Small snap-shooting" targets referred to in Sec. 47, 3, and the "Disappearing man" target referred to in Sec. 47, 4, are best worked by means of the apparatus shown in

Plate 89. This apparatus is placed in the concrete trench which is made just in front of the sand bank (see Plate 17). The height of the apparatus can be adjusted to suit either the "Snapshooting" target or the "Disappearing man" target.

3. The targets are raised by pulling on the string from the firing point; the counterweight on the bar causes the targets to drop when the string is released.

4. Plate 91 shows an alternative pattern apparatus, which can be used for "time limit" as well as snapshooting practices.

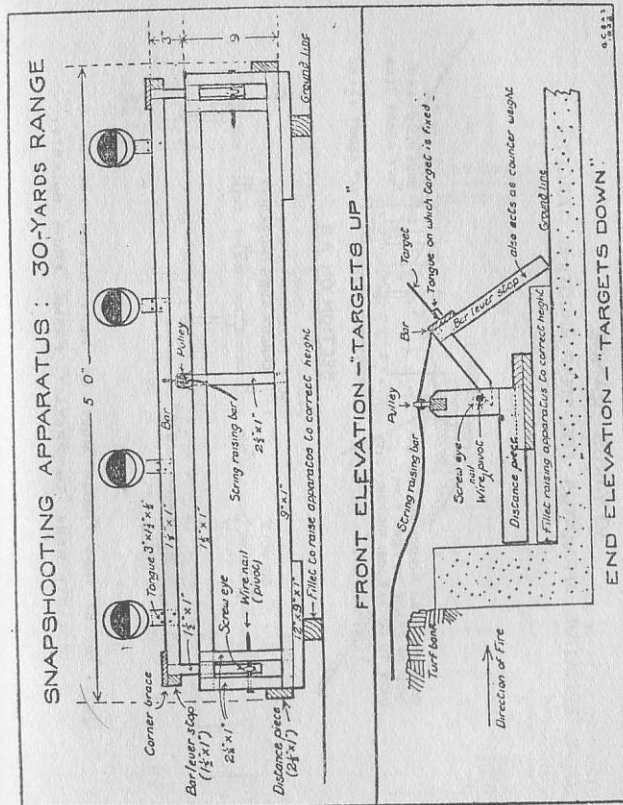
Movement of the targets in high wind is prevented by having the targets mounted on stiff cardboard carriers, which are fitted into grooves made in the wooden legs and in the bottom bar of each target frame.

These cardboard carriers are of three types, one for use with 200/30 yards and 200/25 yards 4-ft targets, the second for use with 500/30 and 500/25 yards 6-ft. targets, and the third for use with snapshooting targets.

The "disappearing man" target can also be used if its base is cut down to form a strip of the same width as the snapshooting target.

The whole apparatus is portable, and should be disconnected from the pulling wire and stored when not in use, as exposure to rain may cause warping of the wood and subsequent difficulty in operation.

5. If old $\frac{1}{2}$ -inch or $\frac{3}{4}$ -inch piping is available, a good type of apparatus for the snapshooting targets can be made as shown in Plate 90. As this apparatus is permanently fixed in the concrete trench, and is therefore



exposed to the weather, it must be kept well greased and oiled.

6. The "Disappearing man" target, being made of thick cardboard, can also be used as a falling target by using the apparatus shown in Plate 92.

7. The targets are arranged in sets of four, pivoted on a horizontal wooden bar so that if struck by a bullet they fall over.

8. Two wooden levers, worked by strings from the firing point, are provided, the one to raise the figures up, and the other to lower them when the time limit has expired, if they have not been struck by a bullet.

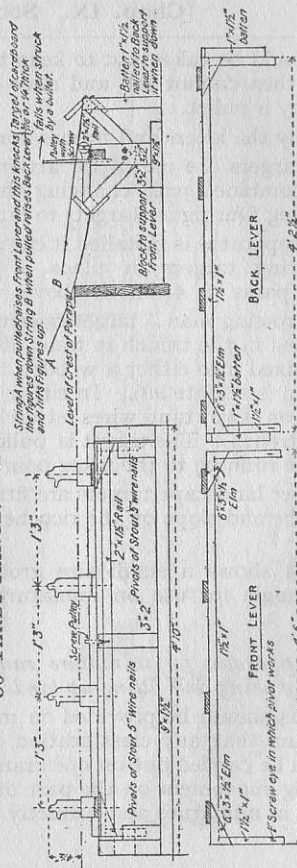
9. The cardboard figures and the horizontal bar are provided with staples, so that the figures can be easily removed or replaced by pulling out the wire nail which forms the pivot.

10. In attaching the strings to work the levers, it should be noted that the string for the back lever should pass over the front lever and the horizontal bar on which the figures are pivoted; whereas the other string should pass underneath the front lever, round the small pulley and back to the same lever. (Plate 92.)

11. When in use, the figures should be raised by pulling on the back lever string gently; as soon as the lever has brought the figures to an upright position the string should be released, when the lever will fall of its own weight.

12. To lower the figures pull the front lever string and release as before.

30-YARDS RANGE.—DISAPPEARING MAN TARGET



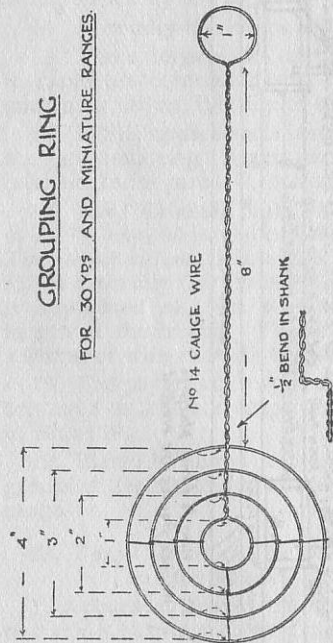


Fig. 43

GROUPING RECTANGLE
FOR 30 YDS AND MINIATURE RANGES

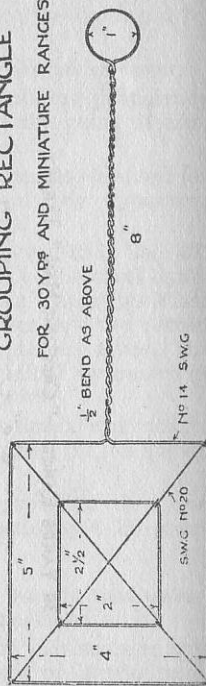


Fig. 44

2. To enable this to be done, apparatus is required which will enable targets:—

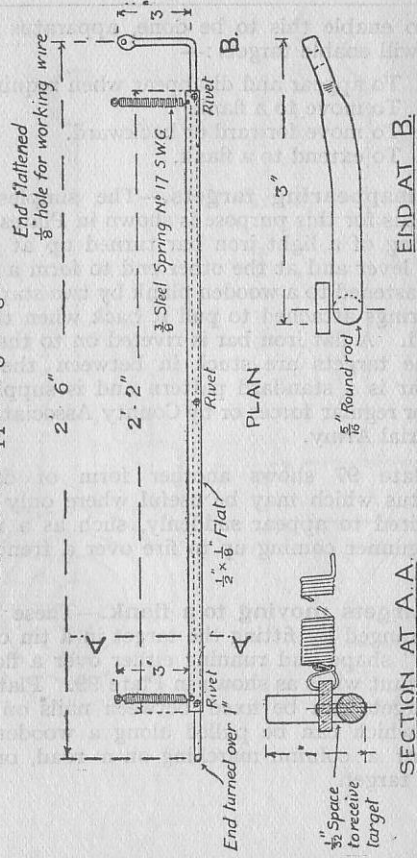
- i. To appear and disappear when required.
- ii. To move to a flank.
- iii. To move forward or backward.
- iv. To extend to a flank.

3. **Disappearing targets.**—The simplest form of apparatus for this purpose is shown in Plates 95 and 96, consisting of a light iron bar turned up at one end to form a lever and at the other end to form a stop. The bar is fastened to a wooden plank by two staples and has two springs attached to pull it back when the string is released. A flat iron bar is riveted on to the round bar and the targets are stuck in between the two bars. This bar is a standard pattern and is supplied by the R.E. for regular forces or by County Associations for the Territorial Army.

4. Plate 97 shows another form of disappearing apparatus which may be useful where only one target is required to appear suddenly, such as a rifleman or Lewis gunner coming up to fire over a trench, parapet or wall.

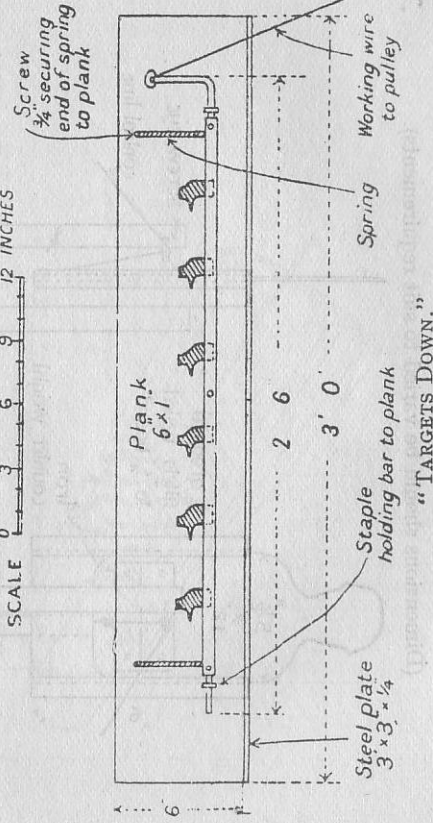
5. **Targets moving to a flank.**—These targets are best arranged by fitting the target in a tin clip bent in an "S" shape and running either over a flat iron bar or two taut wires as shown in Plate 99. Plate 98 shows how targets can be fixed between nails on a wooden block, which can be pulled along a wooden plank to represent a column marching on a road, or a similar type of target.

MINIATURE RANGE Bar for Disappearing Target

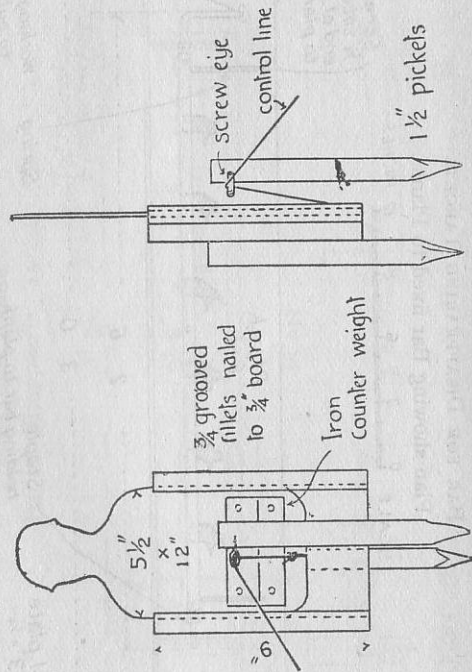


BAR FOR DISAPPEARING TARGETS Plan showing Bar fixed to Plank

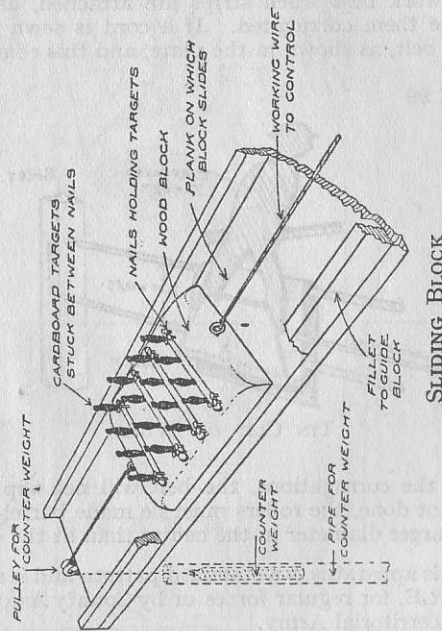
SCALE 0 3 6 9 12 INCHES



MINIATURE RANGE APPARATUS—SURPRISE TARGET. (Dimensions should be varied to suit requirements)



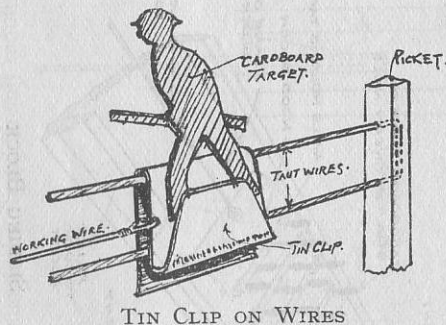
FLANK MOVING TARGETS



6. Targets moving backwards or forwards.—

These targets are best fitted on a canvas belt running round two wooden rollers, as shown in Plate 100. The rollers work best when strips are attached, as shown, to make them corrugated. If a cord is sewn into the edge of belt, as shown in the plate, and this edge is kept

PLATE 99



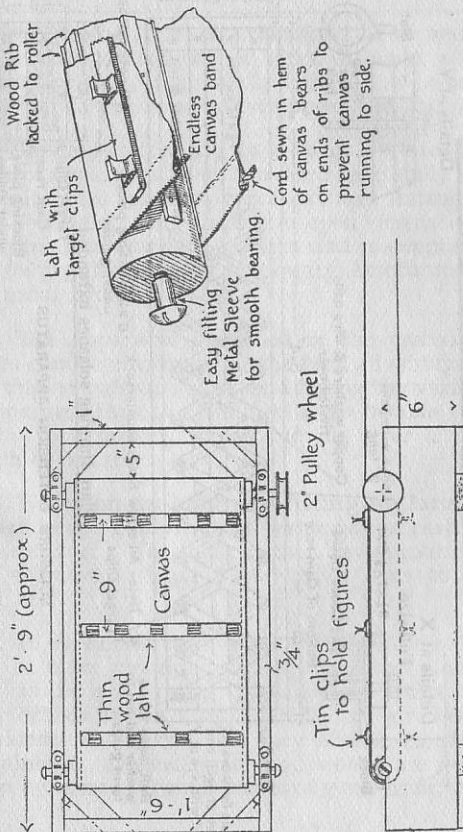
TIN CLIP ON WIRES

outside the corrugations, the belt will not slip off. If this is not done, the rollers must be made barrel-shaped, *i.e.*, of larger diameter in the centre than at the ends.

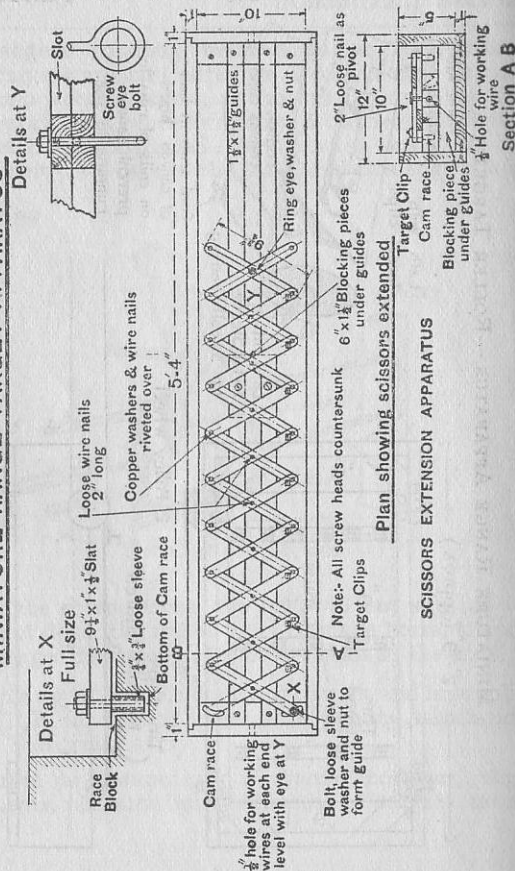
7. This apparatus is a standard pattern and is supplied by the R.E. for regular forces or by County Associations for the Territorial Army.

8. From a distance of 25 yards, however, slight movements, forwards or backwards, of targets cannot

MINIATURE RANGE APPARATUS.—ROLLER TARGET



MINIATURE RANGE TARGET APPARATUS



be distinguished. When, therefore, it is required to represent targets moving a short distance, straight to the front or rear, it is usually best to have a successive number of targets which just appear and disappear.

9. **Targets extending to a flank.**—Plate 101 shows a form of apparatus which can often be usefully employed in a miniature range to represent men extending from close formation into a more open formation. This apparatus is a standard pattern and is supplied by the R.E. for regular forces or by County Associations for the Territorial Army.

10. The apparatus described in the preceding paragraphs can be employed to the best advantage by constructing a landscape bank and fitting the various types of apparatus into this bank so as to be able to arrange targets to represent troops moving over a particular stretch of country.

11. **Notes on making and fitting up landscape.**—The landscape bank itself is best made of earth covered over with turf. The turf can then have a coating of sawdust coloured with paint powder or dyes to represent fields, etc.

12. It is easiest and most effective to represent a piece of open moorland country without much detail, such as hedges, roads, railways or buildings. The latter details are as a rule required to give one or two prominent landmarks, but they should be reduced to a minimum. Bushes, trees and woods are very easily put in by means of small pieces of gorse or fir.

13. While making up the top surface, the perspective and general detail must be carefully watched from the firing point.

14. It will usually be found most convenient to make the back of the landscape bank represent a distance of about 1,500 to 1,000 yards, and the front of the bank about 400 to 250 yards.

15. The size of the landscape bank will depend on the range and the training to be carried out (*see* paras. 29 to 32 of this section). The most effective landscape is obtained by having the bank across the full width of the range. If the range is of the normal width of 24 feet, the depth of the bank from front to rear should be about 12 feet, and it should be made to rise about 3 feet 6 inches in this depth. Whatever the width of range, these proportions should be maintained.

16. Plate 102 shows a landscape bank constructed, as described above, at the Small Arms School.

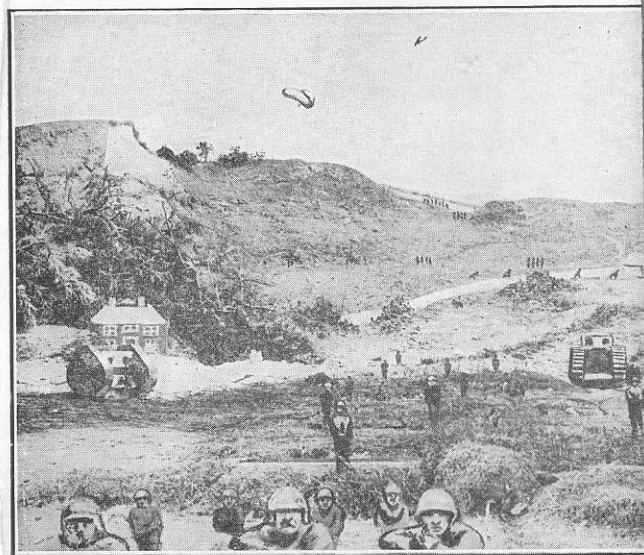
17. Plate 103 is the same landscape with all the targets up at the same moment, showing infantry in various formations.

18. Plates 104 and 105 show how the target apparatus is actually fitted into the bank. It will be noticed that each piece of apparatus is fitted on to a plank fastened to two pickets driven into the bank. In each case, also, there is a small strip of steel, 3 inches high, fastened to the front of the plank to protect the apparatus from damage by the bullets.

19. Plate 106 shows a landscape bank constructed in a wooden box for use in a drill hall.

To face page 207.]

PLA



MINIATURE RANGE. BATTLE PRACTICE

(All Targets shown)

erspective
from the

to make
distance
the bank

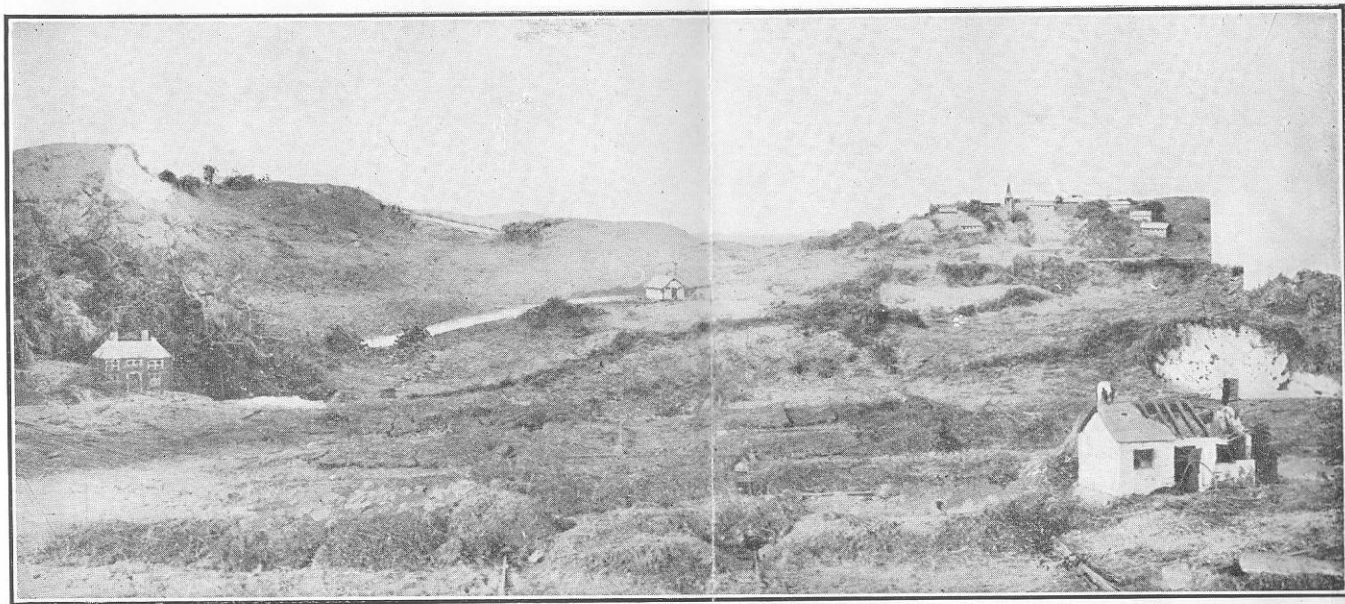
pend on
ee paras.
andscape
all width
width of
r should
se about
width of

structed,

all the
antry in

pparatus
iced that
fastened
ach case,
fastened
tus from

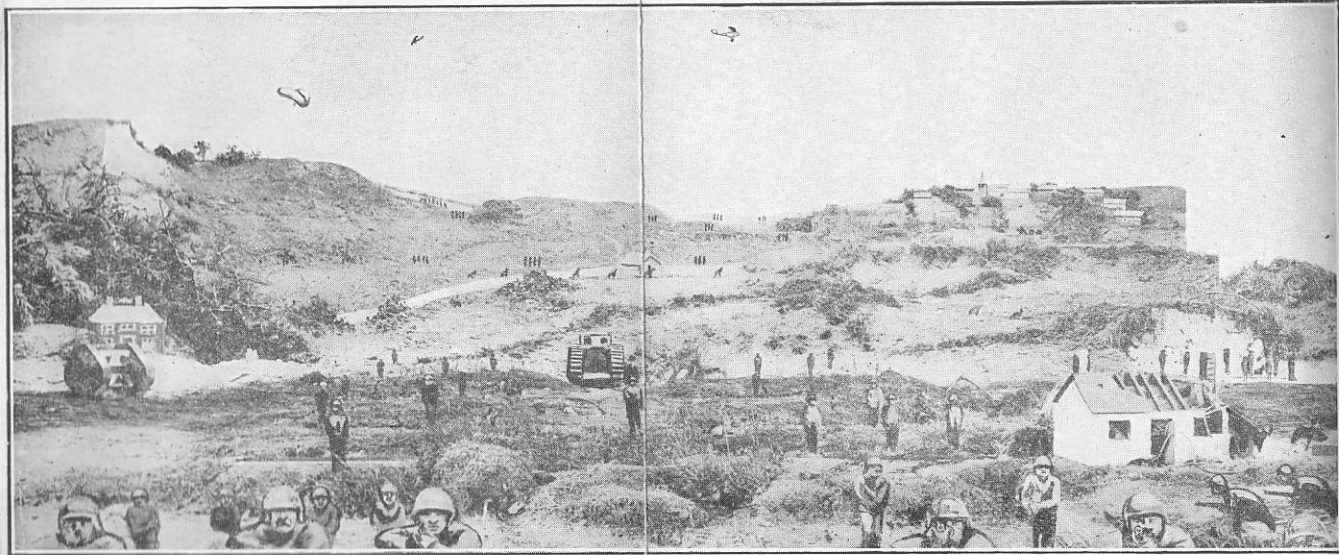
nstructed



MINIATURE RANGE. BATTLE PRACTICE LANDSCAPE. SMALL ARMS SCHOOL, HYTHE
(Targets "Down.")

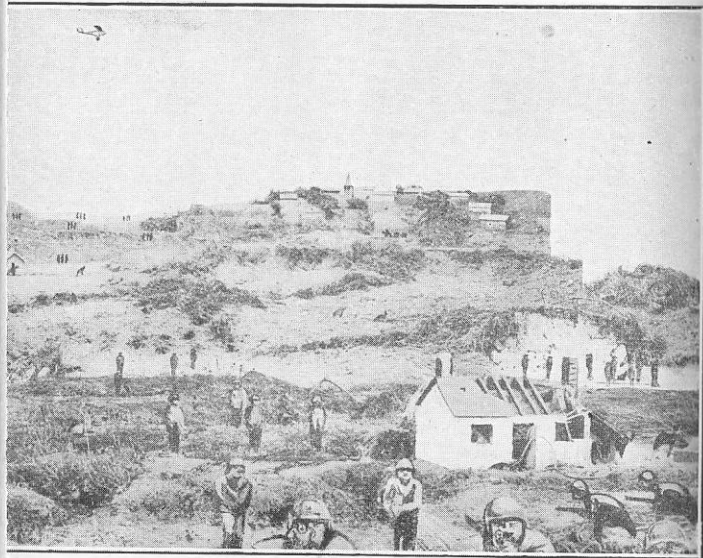
To face page 207.]

PLATE 103



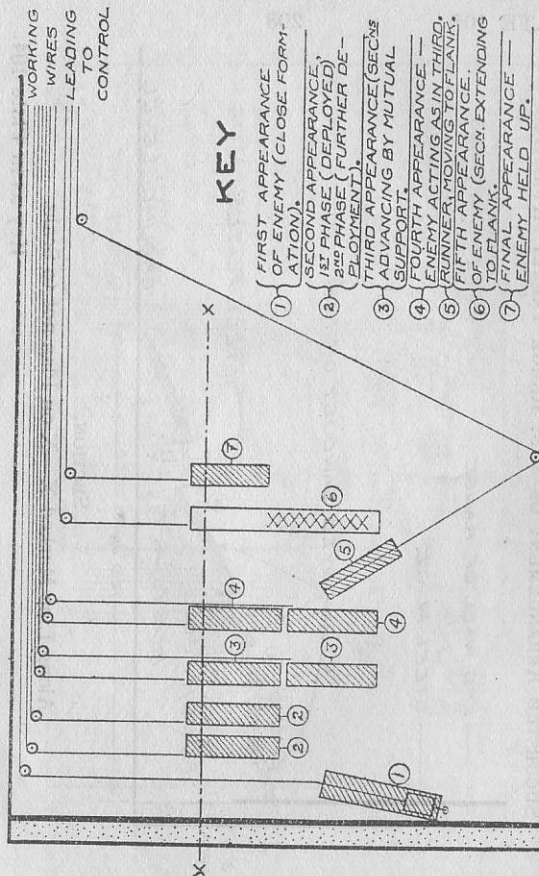
MINIATURE RANGE. BATTLE PRACTICE LANDSCAPE. SMALL ARMS SCHOOL, HYTHE

(All Targets shown "Up" at same moment.)

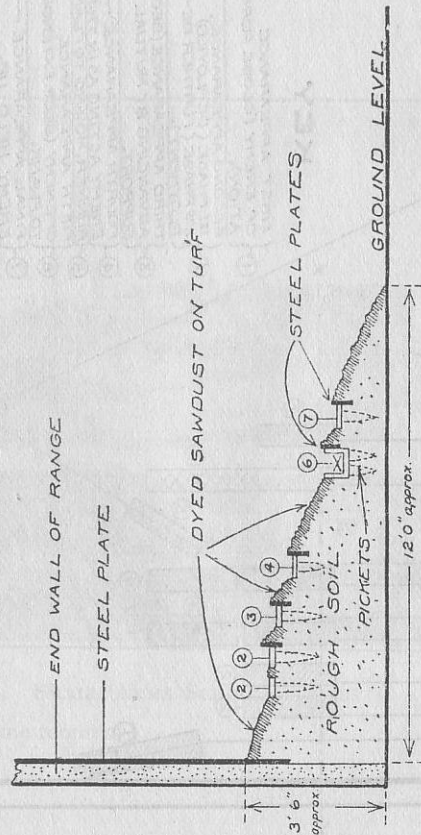


LANDSCAPE. SMALL ARMS SCHOOL, HYTHE
'Up' at same moment.)

SUGGESTED ARRANGEMENT OF MIN. RANGE TARGET APPARATUS



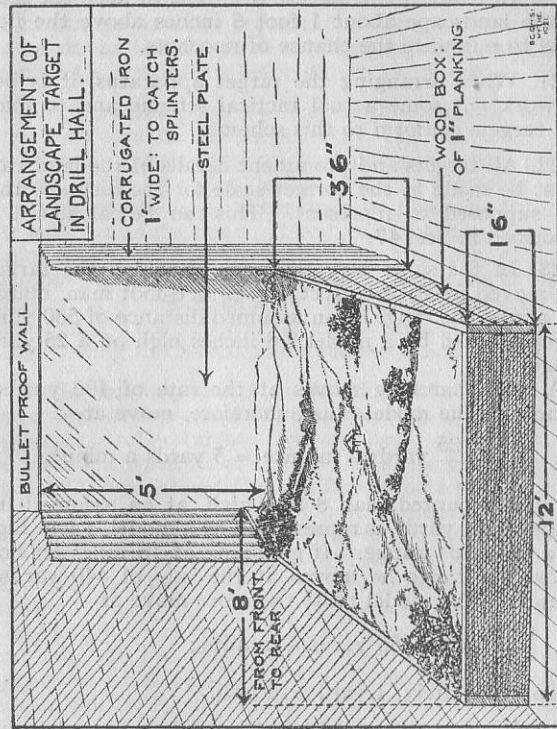
SUGGESTED ARRANGEMENT OF MIN. RANGE TARGET APPARATUS



SECTION.

Along Line Marked X-X on Plan not to Scale.

Key as in Plate 104.



20. In cases of this nature it is best to keep the front of the landscape about 1 foot 6 inches above the floor level to minimize the chance of ricochets.

21. When arranging the target apparatus, it is best to work out some actual tactical scheme and to make the targets conform to this scheme.

22. All targets and prominent details of the landscape must be made to the correct scale for the distance they are supposed to represent. This can be calculated as described in Sec. 47, 7.

23. In the same way the pace at which the targets are moved must be correct, *e.g.* (i), a 6-foot man, marching across the range at an assumed distance of 500 yards is represented by a model 3.6 inches high on a 25-yards range.

A man marching moves at the rate of 100 yards a minute. The model must, therefore, move at—

$$\frac{100 \times 25}{500} \text{ yards a minute} = 5 \text{ yards a minute.}$$

(ii) A mounted man 8 feet high, at an assumed distance of 200 yards, is represented by a model, 1 foot high, on a 25-yards range. If galloping at 15 miles an hour across the range he moves at the rate of 440 yards a minute. The model must therefore move at—

$$\frac{440 \times 25}{200} = 55 \text{ yards a minute ;}$$

or approximately, 1 yard a second.

24. When working out a tactical scheme in a building used solely as a miniature range, it will often be possible

to make the targets move forward down the full length of the range so as to represent an attack pressed right home on to the firers. For this purpose many forms of trolleys, continuous belts, etc., may be used.

25. **Fireworks, etc.**—Considerable interest can be added to any tactical scheme by the use of firework crackers to represent enemy machine guns firing, and by powder puffs, thunder flashes, etc., to represent shells bursting, smoke, etc. These can be obtained from any firework manufacturer. They can be fired at the times required, either by pulling the firework, etc., over a lighted candle or small lamp, or by means of safety fuze, or by a friction igniter. If these fireworks are used there must be good ventilation arrangements for the range, owing to the volume of smoke which is created.

26. In making ranges as described above, the more important articles, such as disappearing bars, extension apparatus, roller targets, wire, pulleys, paint, etc., can be obtained by units of the regular army from the R.E. or R.A.O.C. or through County Territorial Associations for T.A. Units. A complete list of articles so supplied is given in Appendices IX and X. The latter also shows the normal numbers of certain of these articles which a miniature battle practice range for regular units should contain. The R.E. will exchange any item originally supplied by them which may be damaged by fair wear and tear, at the time such damage occurs. All such apparatus supplied by the R.E., excluding expendable stores, will be brought on to an inventory, and will be checked and handed over in accordance with King's Regulations, 1928, paras. 1277 *et seq.*, on units changing

stations. All other woodwork, which is quite rough and of small dimensions, will be provided by the units themselves. The latter will be responsible for the design of the landscape and for the fitting into it of the target apparatus whether supplied by the R.E. or made by themselves. The R.E. will, however, fix pulleys and fit controlling cords or wires as required for the target apparatus laid down in Appendix X, between the target and firing ends of the range, renewing them if necessary on a change of unit. Each unit will keep these in working order for the time it is at the station.

Any extra targets with the controlling wires which a unit provides at its own expense may on change of station be taken with it or disposed of to the incoming unit as may be mutually agreed.

27. It should be clearly noted that, although the general arrangements of the landscape bank are for targets of the nature of battle practice targets, the ordinary grouping, application and snapshooting targets can be fitted into any of the apparatus and used for ordinary shooting practices.

28. This landscape bank is not intended to replace the paper landscape targets, referred to in Sec. 47, 8, but is to be used in addition to, and in amplification of, the paper landscapes.

29. When considering the construction of a miniature battle practice landscape, the proportion of training which will be carried out on this type of range as compared with the number of ordinary grouping, application or snapshooting practices must be duly considered.

30. For instance, in the case of a regular infantry battalion a large proportion of training, especially section leader training, can be carried out on the battle practice landscape, and consequently the whole range may conveniently be fitted up in this way.

31. In the case of regular depots and T.A. battalions, on the other hand, the majority of the training on miniature ranges will consist of grouping, application, rapid and snapshooting practices, and landscape targets will not be used to such a large extent. In these cases, therefore, it may be advisable to construct only a small landscape in a box similar to that shown in Plate 106 and keep the other targets to one side and quite separate (see Plate 107).

32. If this system is not adopted, and the application and snapshooting targets are put into the landscape itself, small portable steel plates should be used to put behind and below these targets to keep the landscape from being unnecessarily damaged.

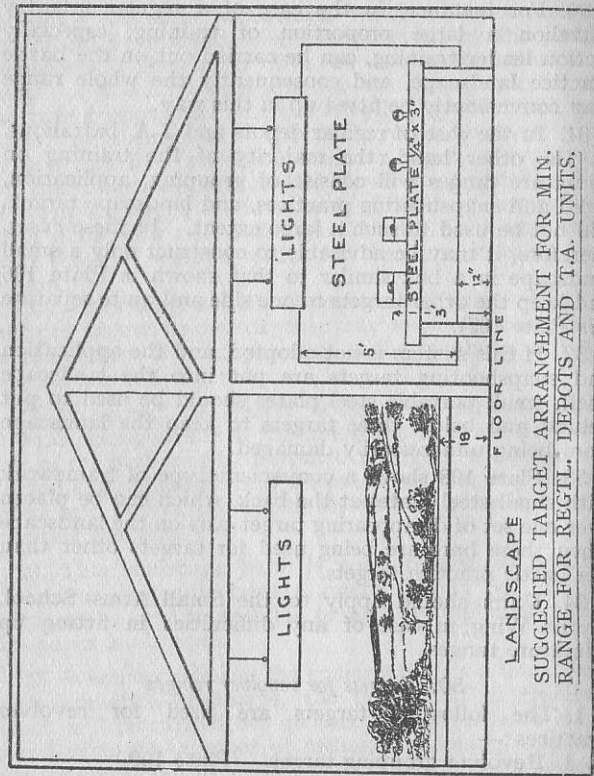
33. Plate 108 shows a convenient type of framework with small steel plates at the back, which can be placed over one set of disappearing target bars on the landscape when these bars are being used for targets other than the battle practice targets.

34. Units should apply to the Small Arms School, Hythe Wing, in case of any difficulties in fitting up miniature ranges.

50. *Targets for revolver ranges*

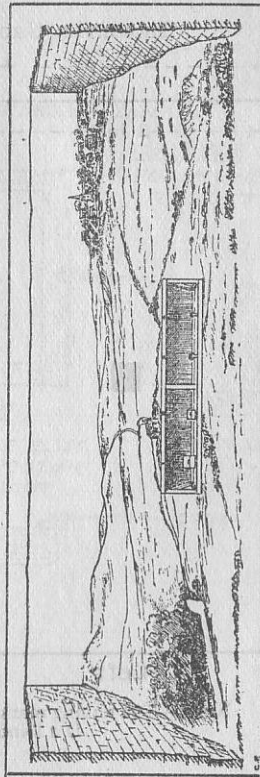
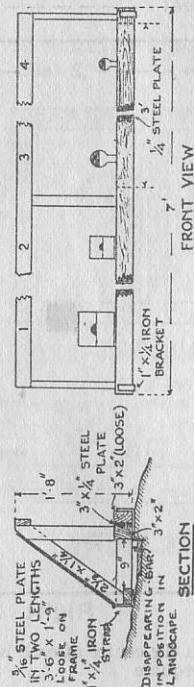
1. The following targets are used for revolver practices:—

- i. Revolver grouping target. (Plate 109.)

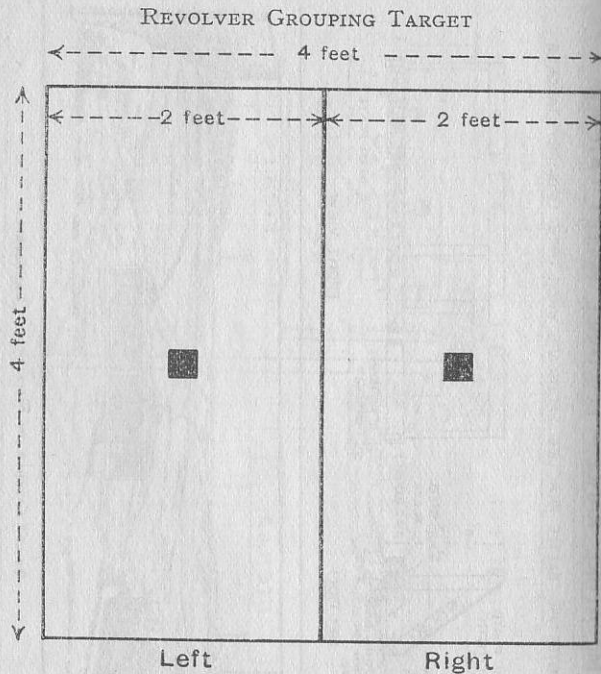


MINIATURE RANGE, - PORTABLE BULLET CATCHER.

FOR PROTECTING BATTLE PRACTICE LANDSCAPE WHEN USING ORDINARY TARGETS.



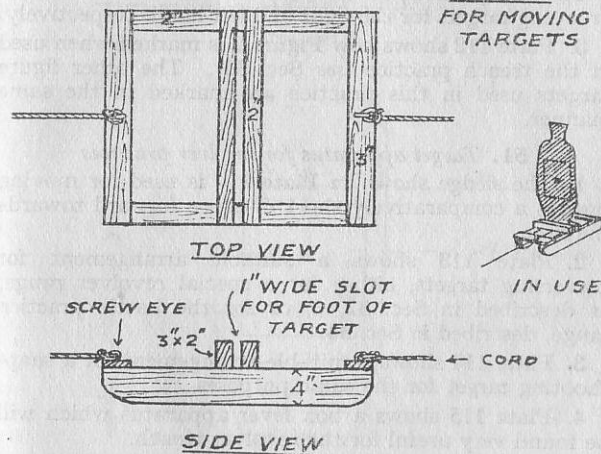
BULLET CATCHER IN POSITION ON LANDSCAPE.



NOTE.—The aiming mark in the centre of each half is a 2-inch square.

APPARATUS FOR CHARGING TARGETS

SLEDGE
FOR MOVING
TARGETS



- ii. Figure 2 (Veneer target) on a sledge. (Plate 110.)
- iii. Figure 2 on a pole. (Plate 111.)
- iv. Figure 2 for trench practice. (Plate 112.)

2. The revolver grouping target is 4 feet square, divided into two equal parts by a vertical line, and with a 2-inch aiming mark in the centre of each half.

The two portions on each side of the vertical line are grouping targets for the right and left hands respectively.

3. Plate 112 shows how Figure 2 is marked when used in the trench practice (*see* Sec. 33). The other figure targets used in this practice are marked in the same manner.

51. Target apparatus for revolver practices

1. The sledge shown in Plate 110 is used for moving targets a comparatively short distance forward towards the firer.

2. Plate 113 shows a suitable arrangement for traversing targets, either for a special revolver range, as described in Sec. 32, 6, or for the battle practice range, described in Sec. 34.

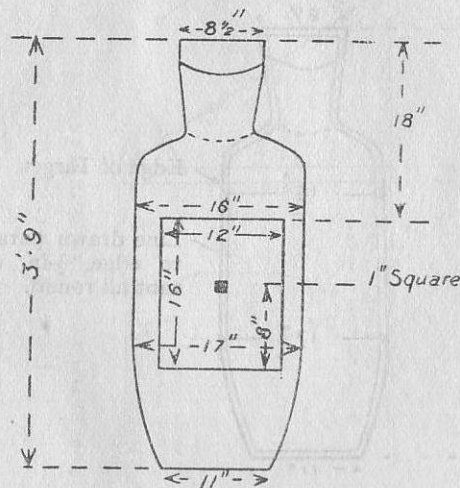
3. Plate 114 shows a suitable arrangement for a snap-shooting target for the same purposes.

4. Plate 115 shows a box lever apparatus which will be found very useful for the revolver trench.

5. Plate 116 shows the grouping rectangle used for revolver work.

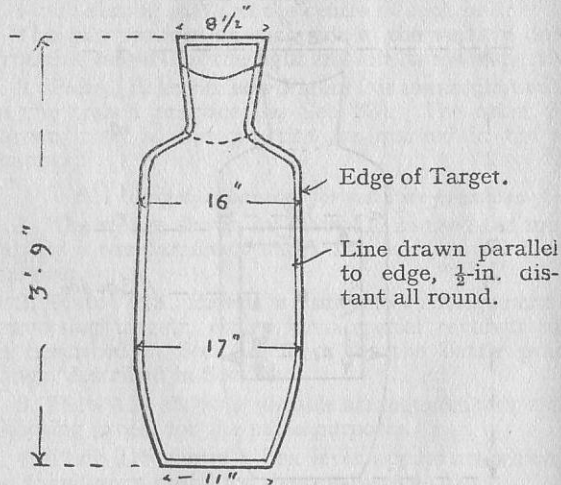
6. Plate 117 shows a continuous socket way which can be constructed on 30-yards or classification ranges and which is useful for holding revolver screens or any other type of screen target.

REVOLVER
No. 2 Figure Target



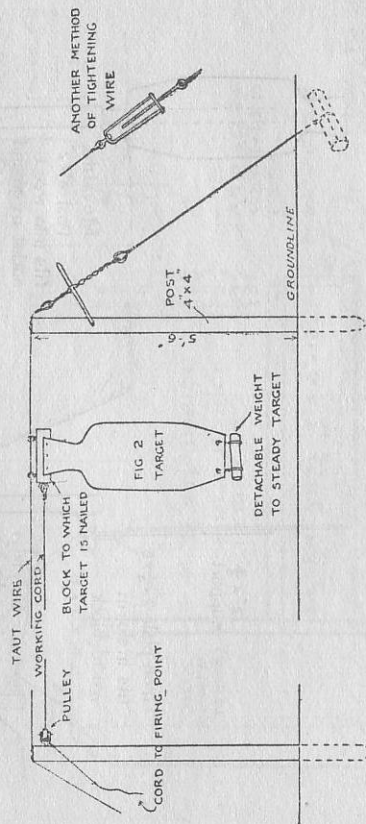
Each shot in centre rectangle—5 points.
Each shot on remainder of target—3 points.

REVOLVER
No. 2.—Figure Target

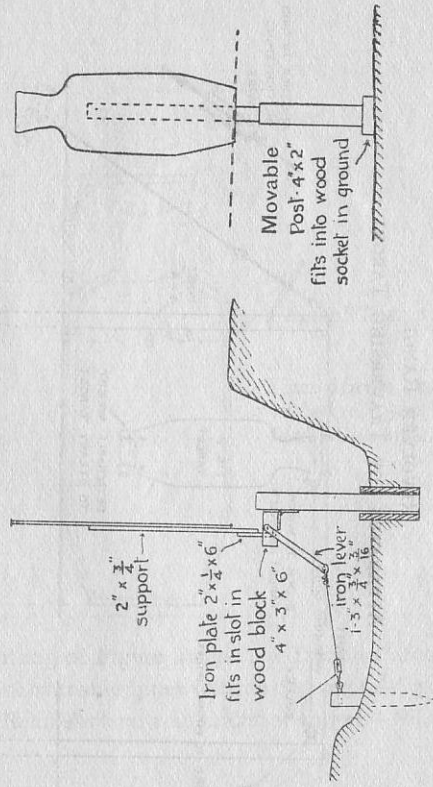


Marking of Figure Target for Trench Practice
Each shot inside inner outline of target—5 points.
Each shot on remainder of target—Nil.

REVOLVER RANGE
APPARATUS FOR TRAVERSING TARGET

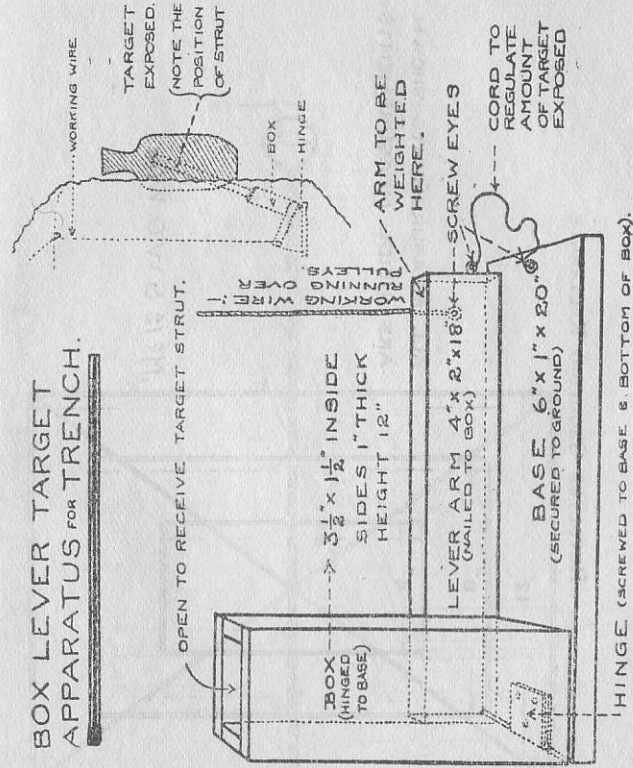


REVOLVER RANGE.—SNAPSHOOTING TARGET



REVOLVER RANGE

BOX LEVER TARGET APPARATUS FOR TRENCH.



APPENDIX I

STORES FOR PRELIMINARY TRAINING

The undermentioned stores will be maintained for preliminary training :—
(Stores for bayonet training courses and dummy grenade courses are not included below, but are shown in Appendices VI, VII and VIII).

Stores	Regular infantry battalions	Cavalry regiment	Single infantry depot	Cavalry depot	Field Company, R.E.	Battery of Artillery, Signal Company or corresponding unit	T.A. Infantry Company or corresponding unit
1. <i>For rifle training—</i> Grouping targets (Plate 58) Small targets (4 foot) (Plate 57) Large targets (6 foot) (Plate 57) *Set of 13 panels of landscape targets †Rests, rifle, aiming, No. 1 (Plate 52) †Rests, tripod, musketry instruction (Plate 53) ... †Aim correctors, No. 1, Mk. II (Plate 54) Aiming discs (Plate 56) ...	10 10 10 2 — — — 48	8 8 8 1 — — — 25	6 6 6 1 — — — 24	12 12 12 1 — — — 24	2 2 2 1 — — — 4	2 2 2 — — — 4	2 2 2 1 — — — 4

[Appendix I.]

Appendix I.]

2. <i>For light automatic training—</i> Target A.A. 1 (Plate 62) Model aeroplane (Plate 49) Aim corrector, Mk. I (Plate 55) (g)	10 10 —	8 8 —	— — —	— — —	1 1 —	1 1 —	1 1 —
3. <i>For revolver training—</i> Revolver grouping targets (Plate 109)	10	8	3	12	2	2	2
4. <i>For machine-gun training—</i> M.G. target (Plate 66) ...	4	4	—	—	—	—	2
5. <i>For elementary tactical training—</i> Silhouette figure targets (Plate 50)	8 of each figure 8	8 of each figure 8	6 of each figure 6	6 of each figure 6	—	—	4 of each figure 2
Dummy screen (Plate 51)							

* Also used for L.A. training.

† This is supplied by R.A.O.C.

‡ For authority and scale of issue see Equipment Regulations, Part 2, for regular army units and Equipment Regulations, Part 3, for T.A. units. and scale of issue see Barrack Schedules, Part I, Appendix I.

For T.A. units from R.A.O.C. Authority as for item †.

All other items are supplied by R.E. for regular army units and will be issued on inventory. For T.A. units the T.A. Associations will supply.

(g) For authority and scale of issue see Equipment Regulations, Parts 2 and 3 for regular army and T.A. units respectively.

APPENDIX II

STORES FOR CLASSIFICATION RANGES

ARTICLES OF STORE TO BE MAINTAINED ON AN EIGHT-TARGET CLASSIFICATION RANGE

1. *Targets for rifle practices.*—

Large target (6 ft.) (Plate 57)	24
Small target (4 ft.) (Plate 57)	24
Large snapshooting (Plate 59)	12
$\frac{3}{4}$ Figure (No. 2) on poles (Plate 73)	12

2. *Targets for light-automatic practices.*—

Light Automatic Grouping Screen (Plate 60)	12
" Screen (Plate 61)	12
Large (6 ft.) target [as for rifle (Plate 57)]	12
Small (4 ft.) target [as for rifle (Plate 57)]	12
Steel Plates (Plate 78)	50
Figure 3 on pole (Plate 74)	15
Figure 6 on pole (Plate 77)	5

3. *Targets for revolver practices.*—

Grouping target (Plate 109)	10
Figure 2 on sledge (Plate 110)	20
" 2 on pole (Plate 111)	10

4. *Targets for machine gun (Vickers) practices.*—

Machine-gun target (Plate 66)	8
Stoppage target (2 ft. \times 2 ft.) (Plate 67)	8

Large (6 ft.) target (Plate 57)	*
Small (4 ft.) target (Plate 57)	*

5. *Miscellaneous stores.*—

Telephones portable	4
Mirrors, double reflecting (Plate 14)	4
Plugs No. 205	4
Flags, red, 6 feet square } As required for	
" " 4 feet by 3 feet } danger signals, etc.	
" red and white (Plate 71)	12
Rings, grouping, rifle (Plate 72)	4
Rectangles, grouping, revolver (Plate 116)	4
Pots, paste	12
Brushes	12
Discs, spotting (2 inches square) (Plate 71)	50
" " (4 inches square) Plate 71)	50
" marking (Plate 71)	12
Tools, cleaning .303" arms—	
Funnel	1†
Pot	1†
Stick	1†
Patches, white, 4 inches by 3 inches for	
grouping targets	} As required.
Patches, black, 4 inches by 3 inches for	
grouping targets	

* See under para. 2 targets for light automatic practices.

† To be maintained on Territorial Army Ranges only.

Patches, black, for covering shot holes	} As required.
" grey " "	
" sand (ochre) " "	
" brown " "	
" white " "	

6. Targets and miscellaneous stores for anti-aircraft practices. *For each 8 targets, or fraction of 8 targets.*

A.A. 1 (Plate 62)	12
A.A. Moving target (complete) (Plate 65) ...	12
Scoring rectangles	As required.
Templates (Plate 64)	12

APPENDIX III

STORES FOR BATTLE PRACTICE RANGES

1. Targets.—

The following targets will be maintained for a platoon battle practice range or on a classification range used also for battle practices :—

1/2 Figure (No. 2) (Plate 73)	25
Kneeling Figure (No. 3) (Plate 74)	25
Lying Figure (No. 4) (Plate 75)	25
Covered Figure (No. 5) (Plate 76)	25
Crossing Figure (No. 6) (Plate 77)	10
Steel Plates (Plate 78)	40
L.A. Screens, 12 ft. 6 ins. by 3 ft. (Plate 61) ...	12

Alternative disappearing figures (Plate 81) ...	10
Falling targets (Plate 86)	10

The above targets will be fitted up on poles or as disappearing targets to suit local requirements.

For larger battle practice ranges the number of targets will be increased proportionately to the above.

Trolley targets (Plates 82 and 83) and drums for working them (Plate 84) will be provided when required.

2. Miscellaneous stores.—

The following miscellaneous stores are required for a battle practice range with 11 shelters :—

Cable, electric " C.1 " or equivalent	As required.
Boxes, joint, rifle range	5
Brackets, bell or telephone	12
Bells, magneto, R or No. 1A	10
Cases, bell bracket	10
Generators, A, Mk. III	1
Telephone sets, C (complete with cells) No. 100 or No. 110	2
Plugs, No. 205	3
Flags, red, 6 feet square	As required for danger signals.
" " 4 feet by 3 feet	
Pots, paste	2
Brushes	2
Patching material	As required.

APPENDIX IV

STORES FOR 30-YARDS RANGES

ARTICLES OF STORE TO BE MAINTAINED ON A STANDARD
30-YARDS RANGE1. *Targets for rifle practices.*—

Large target (6 ft.)	500 yards—30 yards.
Small target (4 ft.)	200 yards—30 yards.
Large Snapshooting	200 yards—30 yards.
"	300 yards—30 yards.
Figures, cardboard,	crossing man.
"	disappearing.

The above targets will be issued to units by R.E. as required.

Landscape targets 1 complete set of 13 panels.

Miniature of these landscape targets 1 set of 13 panels.

These will be renewed as required, but not more than 13 panels per annum.

2. *Targets for light automatic practices.*—

Light automatic grouping screen (Plate 60)	...	3
--	-----	---

3. *Targets for revolver practices.*—

Grouping target (Plate 109)	...	...	3
To be renewed as required.			

4. *Targets for Vickers machine-gun practices.*—

Machine gun target (Plate 66)	...	...	3
Stoppage target, 2 feet by 2 feet (Plate 67)	...	...	3
Targets for T.A. (PART II) (Plate 69)	...	...	2*

* Only required on 30-yards ranges used by T.A. units.

5. *Miscellaneous.*—

Pots, paste	...	...	...	...	1
Brushes	...	...	...	...	1
Rings, grouping, rifle (min.) (Plate 94)	...	...	...	...	1
Rectangles, grouping, rifle (min.) (Plate 94)	...	...	...	...	1
" " revolver (Plate 116)	...	...	...	...	1
Flags, red, 4 feet by 3 feet	...	...	...	...	1
Legs, telescopic, for Lewis guns (at depots only) (Plate 20)	...	...	...	...	2
Rods, measuring (for harmonization)	...	...	...	...	1

APPENDIX V

STORES FOR MINIATURE RANGES

ARTICLES OF STORE TO BE MAINTAINED ON A .22-INCH
MINIATURE CARTRIDGE RANGE1. *Targets.*—

Large target (6 ft.)	...	500 yards—20 yards.
		or 500 yards—25 yards.
Small target (4 ft.)	...	200 yards—20 yards.
		or 200 yards—25 yards.
Small and Large Snap-	{	100 yards—20 yards.
shooting		200 yards—20 yards.
ditto		100 yards—25 yards.
		200 yards—25 yards.

Figure 1	...	...	400 yards—25 yards.
			500 yards—25 yards.
			600 yards—25 yards.
			800 yards—25 yards.
			1,000 yards—25 yards.
Figure 3	...	...	200 yards—25 yards.
			300 yards—25 yards.
			400 yards—25 yards.
			600 yards—25 yards.
Figure 4	...	...	200 yards—25 yards.
			300 yards—25 yards.
			400 yards—25 yards.
Figure 6	...	...	400 yards—25 yards.
			500 yards—25 yards.
Mounted man advancing			600 yards—25 yards.
			800 yards—25 yards.
			1,000 yards—25 yards.
Mounted man crossing			600 yards—25 yards.
			800 yards—25 yards.
			1,000 yards—25 yards.
Machine gun in action			300 yards—25 yards.
			500 yards—25 yards.
Infantry section extended			
(4 figures for each target)			1,500 yards—25 yards.

The above targets to be supplied by R.E. as required.
Landscape targets 1 complete set (13 panels).

Miniatures of these landscape targets 1 set of 13 panels.

These will be renewed by R.E. as required, but not more than 13 panels per annum.

2. Miscellaneous stores.—

Pots, paste	...	...	...	...	...	1
Brushes	...	...	...	...	...	1
Red Flags	...	...	...	...	...	1
Rings, grouping, rifle (min.) (Plate 94)	...	...	...	...	...	1
Rectangles, grouping, rifle (min.) (Plate 94)	...	...	...	...	...	1
Rods, measuring (for harmonization)	...	...	...	...	...	1

APPENDIX VI

R.A.S.C. AND R.A.O.C. STORES FOR ASSAULT COURSES FOR
BAYONET TRAINING

The stores detailed below will be held on charge by units for bayonet training courses. Free initial issue will be made by the R.A.S.C. and the R.A.O.C., the quantities shown being considered sufficient for one year's requirements. The cost of upkeep for these items will be paid for by units out of the annual allowance referred to in Allowance Regulations, 1930, para. 575.

Article	Infantry Battalion, Regular	Infantry Depot	Field, Fortress, Railway, A.A. Searchlight, 58th (Porton) Companies R.E., Regular	S.A.S., Hythe, Guards Depot, Rifle Depot, S.M.E., Chatham	R.M.A., Woolwich	R.M.C., Sandhurst	Remarks
SECTION No. 2—A.N.I.V. Sacks, jute, 2 bushel	100	44	40	400	100	200	

SECTION No. 3. Wire, ordinary, steel, hard, No. 9 S.W.G. lb.	8	4	2	32	8	8	For rings of train- ing sticks.
SECTION No. 7: Needles, packing, cut- ting	4	2	2	6	4	4	
SECTION No. 8—A. Spun yarn ... lb.	36	12	12	144	36	72	1 lb.=30 feet. For fastening sacks to stands, For making and repairingsacks.
Twine, whipping lb.	4	2	2	16	4	8	
Twine, packing, midd- ling ... lb.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	2	$\frac{1}{2}$	1	For fastening corks to tar- gets.
SECTION No. 9—A. Paint, service colour, P.F.U. ... lb.	28	14	14	112	28	56	
SECTION No. 13—C. Canvas, packing, Hes- sian, 72 inches, yards	50	25	20	200	100	100	For canvas screens of as- sault course and also re- pair of sacks.

Article	Remarks
SECTION No. 28—B. Wire, jointing and binding A.A. 21, lb.	For fastening rings to train- ing sticks.
N.I.V. Ash sticks, 3-inch cir- cular, 5 feet 9 inches long	As authorized by G.O.S.C. in -C. (See E.R., Part 1.) For training sticks.
R.A.S.C. Supply. Straw tons	Old pailleasse straw to be used when available.
Infantry Battalion, Regular	56
Infantry Depot	28
Field, Fortress, Railway, A.A. Searchlight, 58th (Porton) Companies R.E., Regular	14
S.A.S., Hythe, Guards Depot, Rifle Depot, S.N.E., Chatham	112
R.M.A., Woolwich	56
R.M.C., Sandhurst	56

Indents for articles required to complete to the above scale as a first supply should be submitted to the R.A.S.C. and R.A.O.C.

APPENDIX VII

R.E. STORES FOR BAYONET TRAINING COURSE

1. The following stores will be supplied by the R.E. for regular forces for one bayonet training course. This will be a first issue only. Material for upkeep will be issued to units by the R.E. on repayment.

2. *Assault course*, with 48 sacks, 5 screens, 18 stands, 12 target sticks. (See Sec. 40.)

4 inches by 3 inches scantling	...	150 feet run.
3 inches by 2 inches	"	600 "
2½ inches by 1½ inches	"	200 "
1½ inches by 1½ inches	"	20 "
Nails, clout, ¾-inch	...	2 lb. "
" wire, 1½ inches	...	1 lb.
" " 3 inches	...	6 lb.
" " 5 inches	...	6 lb.

3. *Set of 12 stands for preliminary training*, similar to those used for the assault course.

4 inches by 3 inches scantling	...	100 feet run.
3 inches by 2 inches	"	200 "
2½ inches by 1½ inches	"	100 "
Nails, wire, 3 inches	...	3 lb. "
" " 5 inches	...	3 lb.

Infantry Battalions } will have one set of each.
R.M.A., Woolwich }

R.M.C., Sandhurst, will have 2 sets of each.

S.A.S.

S.M.E.

Guards depot

Rifle depot

} will have 4 sets of each.

Infantry depots and R.E. units other than S.M.E. will have the material for the assault course only.

APPENDIX VIII

R.E. STORES FOR DUMMY GRENADE COURSE

The following stores will be issued by the R.E. for regular forces for one dummy grenade course. (*See Sec. 35, 6.*) They will be maintained by the unit from the annual maintenance grant for the upkeep of these and bayonet training courses.

Poles, round 17 feet long	4 inches diam. av.	2
" 10 feet	" 3 inches	2
" 8 feet	" 3 inches	4
" 5 feet	" 2½ inches	21
" 3 feet	" 2 inches	8
Wire netting, 1¼ inches mesh,	3 feet wide	75 yds.
Wire stay B.B. 1·7 strand, No. 14 S.W.G.		60 yds.
Staples, 1 inch	... ..	1 gross
Nails, wire 1½ inches...	... ..	1 lb.
Infantry Battalions	} will have one set of the above.	
R.M.A., Woolwich		
R.M.C., Sandhurst,	will have 2 sets of the above.	
S.A.S.	} will have 4 sets of the above.	
S.M.E.		
Guards depot		
Rifle depot		

APPENDIX IX

STORES SUPPLIED BY THE R.A.O.C.

The following articles required for small arms training are supplied by the R.A.O.C. Articles supplied for bayonet training courses are given in Appendix VI, and are not included in this list.

Article	Service
Tripod rest. (Plate 53) ...	For rifle instruction.
Aiming rest. (Plate 52) ...	" "
Aim corrector. No. 1, Mk. II. (Plate 54).	" "
" " Mk. I. (Plate 55)	For A.A. sights.
Canvas, packing, Hessian, 72-inch and 48-inch.	For classification and miniature ranges.
Nails, clout, $\frac{3}{4}$ -inch ...	" "
" wire, 2-inch ...	For miniature ranges.
" " 3-inch ...	" "
" " 5-inch ...	" "
Telephones, sets, C No. 100 or No. 110 (complete with cells)	For "classification" and battle practice ranges.
Bells, magneto, R or 1A ...	For battle practice ranges.
Boxes, plug, single ...	" "
" joint, rifle range ...	" "
Generators, A, Mk. III. ...	" "
Twine, packing, large ...	" "
" middling ...	" "
Cable, electric, C. 1. or equivalent.	For battle practice ranges and classification ranges.
Sandbags ...	For all types of ranges.
Leg, Telescopic, for Lewis Gun (Plate 20) ...	For 30-yards ranges at Depots.
Tools, cleaning, '303" arms:—	For Territorial Army Ranges ONLY
Funnel	
Pot	
Stick	

APPENDIX X

STORES SUPPLIED BY THE R.E.

The following articles required for small arms training are supplied by the R.E. for regular forces and by County Associations for the Territorial Army.

Articles supplied for bayonet training and grenade courses are given in Appendices VII and VIII, and are not included in this list.

Article	Service
Paper articles and cardboard targets.	For classification, 30-yards and miniature ranges.
Veneer targets ...	For battle practice, classification and 30-yards ranges.
Landscape targets ...	For 30-yards and miniature ranges.
Target frames (Hythe pattern)	For classification ranges.
Grouping rings ...	For all ranges.
Aiming discs ...	For preliminary training.
Model Aeroplanes ...	" "
Falling steel plates, $\frac{3}{8}$ -inch thick, weight 16 $\frac{1}{2}$ lb.	For "battle practice" ranges and classification ranges.
Steel plates, 10 feet by 5 feet by $\frac{3}{8}$ -inch.	Stop butts and bullet catchers for miniature ranges.
Ditto, 5 feet by 5 feet by $\frac{3}{8}$ -inch	" "
Brackets, bell or telephone ...	For battle practice ranges.
Cases, bell, bracket ...	" "
Plugs, No. 205 ...	For "battle practice" ranges and classification ranges.

Article	Service	Normal number to be provided for each regular force range
Steel Plates, $\frac{1}{4}$ -inch by 3 inches by 3 feet	Miniature ranges.	13
Bars, disappearing target, 2 feet 6 inches long, complete with 2 springs (Plate 96)	"	12
Spare springs for ditto	"	As required for repairs.
Scissors, slat apparatus, for extending target, 5 feet 6 inches long (Plate 101)	"	1
Roller target, complete with mounting (Plate 100)	"	1
Portable bullet catchers (Plate 108) ...	"	1†
Counter weights, 10 lb.	"	3
Pulley blocks, $1\frac{1}{2}$ inches diameter, vertical	"	28
Pulley blocks, $1\frac{1}{2}$ inches diameter, horizontal	"	9
Wire flexible, 7 strands each, No. 24 gauge, for working targets	"	440 yards.
Wire flexible, 36 strands each, No. 24 gauge, for crossing targets	"	50 yards.
Screws, $\frac{3}{4}$ -inch, No. 8	"	As required.
Screws, 1-inch, No. 10		
Screws, $1\frac{1}{2}$ -inch, No. 12		
Staples, 1 inch		
<i>Levigated Colour Powders</i>		
Chrome yellow (middle)	"	$2\frac{1}{2}$ lb.*
Venetian red	"	$\frac{1}{2}$ lb.*
Umber brown (burnt)	"	$\frac{1}{2}$ lb.*
Emerald green	"	$2\frac{1}{2}$ lb.*
Ultramarine blue	"	$2\frac{1}{2}$ lb.*
Prussian blue	"	$1\frac{1}{2}$ lb.*
Lamp black	"	$\frac{1}{2}$ lb.*
Whiting	"	4 lb.

* In view of the varied requirements of different ranges, it is not intended that these scales should be rigidly adhered to. The quantities stated are considered sufficient to last an average miniature range 1 year.

† Not required for half-and-half ranges (Plate 107).

INDEX

NOTE.—For "Plates," see pp. vii to xii.

A.

	PAGE
Aeroplane target on pole, details of	132
Aim correctors : issue of	136
Aiming discs : issue of	136
" rests : issue of	136
Ammunition, .22-in., penetration by	75
Anti-aircraft practices—	
— Light automatics : details of targets for	132, 144 <i>et seq.</i>
— Special considerations for	42 <i>et seq.</i>
Appliances, responsibility for provision and maintenance	1
Assault courses, bayonet training—	
— Apparatus for : upkeep of by unit	123
— Construction of : details	125 <i>et seq.</i>
— Marching out inspection	123
— Stores for	236-239

B.

Battle practice—	
— Landscape, miniature range : construction of	212
— Targets : description of	161 <i>et seq.</i>
Battle practice ranges—	
— Communications for... ..	63 <i>et seq.</i>
— Construction of : details	62 <i>et seq.</i>
— Danger area : considerations	59 <i>et seq.</i>
— Firing point not to be erected	69
— Marking of by posts	69
— Nature and use of	2
— Provision of : considerations in selecting site	58 <i>et seq.</i>
— Revolver : detail for	113
— Target apparatus for	161

Bayonet training assault courses—	PAGE
— Apparatus for : upkeep of by unit	123
— Construction details	125 <i>et seq.</i>
— Marching out inspection	123
— Stores, R.E., for assault course	239
— „ R.A.S.C. and R.A.O.C.	236
Bayonet training, details of, apparatus for	124
Boards—	
— Functions of regarding ranges	8
— Inspection of new or reconstructed ranges	6
— Proposals for construction of ranges : assembling of	3
— Safety of rifle ranges : assembling of	3
— Territorial Army ranges : assembling of to consider proposals for... ..	7

C.

Camps, musketry, commandant appointment and duties ...	1
Classification ranges—	
— Nature and use of	2
— Sites for : considerations affecting selection	11 <i>et seq.</i>
— Targets for : details of	136 <i>et seq.</i>

D.

Damages—	
— Bayonet training courses : marching out	123
— Grenade training apparatus : marching out : handing over stores	115
— Record of to be kept by range wardens	128
Danger areas—	
— Adjoining ranges : considerations... ..	12 <i>et seq.</i>
— Armoured fighting vehicles practice with .303-in. S.A.A.	62
— Battle practice range	59 <i>et seq.</i>
— Grenades, H.E., live : requirements	119
— „ smoke : requirements... ..	120
— Hill backgrounds to : considerations affecting value of	16 <i>et seq.</i>
— Hollow site : disadvantages and objections	20 <i>et seq.</i>
— Information for consideration of safety of range	3
— Notice of to be kept : particulars for	10
— Revolver ranges	105, 113

Danger areas—continued	PAGE
— Single ranges : consideration	11 <i>et seq.</i>
Distinguishing marks on ranges and targets	35
Dummy grenades—	
— Course : R.E. stores for	241
— „ responsibility for upkeep of	115
— Firing area for rifle grenades	113

F.

Falling targets, steel : safety precautions when using	178
Fireworks, etc. : use of on miniature ranges	211
Firing point—	
— Battle practice ranges : not to be erected	69
— Miniature ranges, indoor	101
— Provision and construction of	33
— Machine gun and light automatics : corrected	48
Flags, miss : use and description of	156
„ red : details of for use on ranges	10
Flagstaffs on ranges : details and erection of	35

G.

Grenades—	
— H.E., live, danger area for	119
— Hand : apparatus for training	115
— Rifle, dummy : firing area	113
— „ dummy : maximum ranges for	113
— Smoke, danger area for	120
Grouping rectangle : revolver work	218
„ ring, rifle : use and description of	156

L.

Inspection—	
— Marching out : handing over stores	115, 123, 211
— Miniature ranges	71
— Range telephones : arrangements for	2
— Ranges for rifle clubs	57, 74
— Site for range : by board	4

L.	PAGE
Landscape paper targets : use and description of ...	183 <i>et seq.</i>
Landscapes for miniature ranges : details of ...	205 <i>et seq.</i>
Light automatic practice—	
— Safety precautions to be taken ...	54 <i>et seq.</i>
— Targets for : description of ...	144 <i>et seq.</i>
Lighting of indoor miniature ranges ...	95

M.

Machine gun practices : Vickers and light automatic considerations ...	47 <i>et seq.</i>
Marching out inspection : handing over stores ...	115, 123, 211
Markers' galleries : requirements of ...	22
Marking disc : use and description of ...	156
Miniature ranges—	
— Construction proposals : authority for approval ...	71
— Handing over apparatus ...	211
— Indoor : type of : design ...	102
— Indoors, construction of ...	88 <i>et seq.</i>
— Inspection of ...	73
— Nature and use of ...	2
— Representative targets for ...	180
— Rifle clubs : inspection of, etc. ...	74
— Safety precautions : general ...	104
— Sites, outdoor : selection of ...	78 <i>et seq.</i>
— Target apparatus for ...	194 <i>et seq.</i>
— Types of ...	76 <i>et seq.</i>
— Uses of ...	70
— Ventilation of : indoor ...	101

P.

Penetration by .22-in ammunition ...	75
Practice, A.A.—L.A. special arrangements for... ..	42 <i>et seq.</i>

R.

Range wardens—	
— Duties and details of ...	8 <i>et seq.</i>
— Instruction of in care and maintenance of telephones ...	2
— Senior : responsibility of ...	128

Ranges—	PAGE
— Allotment of : authority ...	1
— Battle practice : construction ...	61 <i>et seq.</i>
— " " target apparatus for ...	161 <i>et seq.</i>
— Care of : responsibility for ...	8 <i>et seq.</i>
— Charge of ...	1
— Classification : selection of site and construction of ...	11 <i>et seq.</i>
— Cleanliness of : responsibility for... ..	1
— Construction of, sequence for ...	40 <i>et seq.</i>
— Lettering of ...	35
— Miniature indoor : construction of ...	88 <i>et seq.</i>
— New or reconstructed : inspection of ...	6
— Proposed : details of report on ...	4 <i>et seq.</i>
— Provision of : procedure ...	2 <i>et seq.</i>
— Repairs, minor : when carried out by troops ...	9
— Revolver : selection of site and details of ...	105 <i>et seq.</i>
— Rules : use of red flag ...	10
— Safety of : assembling of a board... ..	3
— Territorial Army, construction : formation of committee for consideration of proposal ...	7
— 30-yard : construction of ...	49 <i>et seq.</i>
— Types of ...	2
Representative targets for miniature and 30-yd. ranges ...	180

Revolver—

— Battle practice range : details of ...	113
— Practices, target apparatus for ...	218 <i>et seq.</i>
— Ranges, selection of site ...	105 <i>et seq.</i>
— Target for practice : detail of ...	132, 213
— Target : use of on 30-yards range... ..	186
— Trench : considerations re construction ...	109

Rifle—

— Clubs, miniature ranges for ...	74
— Grouping ring : use and description of ...	156
— Harmonization of when shooting at landscape targets... ..	184
— Targets for : list of ...	136 <i>et seq.</i>

Rifle grenades—

— Dummy : firing area for ...	113
— H.E. danger area for ...	119
— Ranges for ...	113 <i>et seq.</i>

S.		PAGE
Safety precautions—		
— Light automatic practice, arrangements for on 30-yards range	...	54
— Miniature ranges	...	90, 104
— Smoke grenades: firing areas	...	122
— Targets, steel falling: when using	...	178
— 30-yard ranges: special considerations	...	54 <i>et seq.</i>
Sites—		
— Battle practice range: considerations	...	58 <i>et seq.</i>
— Classification range: considerations	...	11
— Hill background for range: value of	...	16 <i>et seq.</i>
— Hollow for ranges: objections to	...	20 <i>et seq.</i>
— Inspection of by board	...	4
— Miniature ranges, outdoors: considerations	...	78 <i>et seq.</i>
— Revolver ranges: considerations	...	105
— 30-yard ranges: considerations	...	49
— Smoke grenades: danger area for	...	120
— Spotting discs: use and description of	...	156
— Stop butt: necessity for and notes on	...	30, 52, 82
Stores—		
— Battle practice ranges: list of	...	230
— Bayonet assault course	...	236, 239
— Classification ranges: list of	...	228 <i>et seq.</i>
— Dummy grenade course	...	241
— Preliminary training: list of	...	226 <i>et seq.</i>
— Miniature ranges: list of	...	233
— 30-yard ranges: list of	...	232
— Training, supplied by R.A.O.C.: list of	...	242
— Training, supplied by R.E.: list of	...	243

T.

Tank range for firing .303-in. S.A.A.	...	62
Target apparatus—		
— Battle practice ranges	...	161 <i>et seq.</i>
— Classification ranges	...	156 <i>et seq.</i>
— Miniature ranges: details of	...	194 <i>et seq.</i>
— Preliminary training	...	128 <i>et seq.</i>

Target apparatus—continued		PAGE
— Revolver practices: details of	...	218 <i>et seq.</i>
— 30-yard ranges	...	186 <i>et seq.</i>
Targets—		
— A.A. arrangements for	...	42
— A.A. light automatic: description of	...	146
— Aeroplane on pole: details of	...	132
— Battle practice, description of	...	161
— " " ranges: arrangement of	...	161 <i>et seq.</i>
— " " ranges: list of	...	230
— Classification ranges: details of	...	136 <i>et seq.</i>
— " " list of	...	228
— Elementary tactical training: details of	...	128
— Frames: use and construction of	...	34, 88
— Landscape, paper: use and description of	...	183
— Light automatic: list of	...	144
— Machine gun and L.A.: placing of	...	47
— Miniature ranges	...	180, 233
— Numbering of	...	35
— Representative, for miniature and 30-yard ranges	...	180
— Revolver practice: details of	...	132, 213
— " ranges: details of	...	213
— " trench: working of	...	111
— Steel falling: safety precautions when using	...	178
— Store: erection of	...	37
— Supply of: normal channel	...	128, 243
— 30-yard ranges	...	180, 232
— Vickers machine gun: detail of	...	132, 151 <i>et seq.</i>
— Workshops for construction and repair of	...	37
Telephones—		
— Battle practice ranges: use of	...	68
— Range, inspection of: arrangements	...	2
— Ranges: details of supply of	...	37
30-yard ranges—		
— L.A. and M.G. targets	...	186
— Nature and use of	...	2
— Representative targets for	...	180
— Sites for: considerations	...	49 <i>et seq.</i>
— Suitability of for all classes of range practices	...	49

30-yard ranges—continued	PAGE
— Target apparatus	186 <i>et seq.</i>
Training, preliminary, stores for: list of	226 <i>et seq.</i>
„ stick for bayonet fighting	124
V.	
Ventilation, indoor miniature ranges	101
Vickers machine gun—	
— Targets: description of	132, 151 <i>et seq.</i>

Printed under the authority of HIS MAJESTY'S STATIONERY OFFICE
by William Clowes & Sons, Limited, London and Beccles.

Guns, Handbooks for—continued.

- 4.5-inch Q.F. Howitzer, Marks I and II, on Marks I and Ia Field Carriages, Land Service, 1927. 4s. 6d. Amendment No. 1. Oct. 1929. 1d.
- 6-inch B.L. Mark XIX Gun on Travelling Carriage. Land Service, 1920. 4s. Amendments Nos. 2 to 5. 1d. each.
- 6-inch B.L. 26-cwt. Mark I Howitzer on Mark I Travelling Carriage, Land Service, 1924. 3s. 6d.
- Do. Amendments Nos. 1 to 5. 1d. each.
- 6-inch M.L. Trench Mortars, Marks I, II and III. Land Service, 1920. 1s.
- Do. Amendment (No. 1), Aug. 1923. 1d.
- 8-inch B.L. Howitzer. Marks VI—VIII. 7s.
- Do. Amendments No. 3. March 1923. 2d.; Nos. 4 to 7. 1d. each.
- 9.2-inch B.L. Guns, Mark IX "C," Mark IX, and Marks X, X^v, and X*, on Carriages, Garrison, Barrette Marks IV, V, Va, Vb, VI and VIa. Land Service, 1923. (G.H. 80.) 2s. Addendum. No. 1. Ordnance Q.F. Hotchkiss 6-pr. used as Sub-Calibre Gun in outside position. 9d. Amendment No. 2. Dec. 1925. 1d.
- 9.2-inch B.L. Howitzer. Marks I and II. 1920. 3s. Amendments No. 2. Sept. 1922. 3d. Amendments No. 3. March 1923. 1d.; No. 4. Dec. 1923. 1d.; No. 5. July 1924. 2d.; No. 6. Dec. 1925. 1d.
- 9.2-inch B.L. Marks X, X^v and X* Guns, on Mark V Mounting (Land Service) 1826. Amendments Nos. 5, 7. 1d. each.
- 9.2-inch B.L. Marks X, X^v and X* Guns, on Mark VI Mounting. (Land Service), 1926. Amendments Nos. 4, 6. 1d. each.
- 3-pr. 2 cwt. Q.F. Marks I and II Guns, on Mark I Mountings, in Marks I, Ia and II Medium Tanks. Land Service, 1929. 4s. 6d. Amendment No. 1. 1d.
- 6-pr. Q.F. Guns on Casement Mounting. 1920. 2s. 6d.
- 13-pr. Q.F. Gun on Mark I Field Carriage, 1914. Amendments No. 3. Sept. 1923. 1d.
- 13-pr. Q.F. Marks I to III Guns on Mark I Field Carriage. Land Service, 1929. 3s. 6d.
- 18-pr. Q.F., Mark I, I*, II and II*, on Carriage, Field, Mark I. Land Service 1921. 2s. 6d. Amendments No. 1. Sept. 1922. *Gratis*. Amendments No. 2. March 1923. 1d.; Amendments No. 3. May 1923. 1d.
- Do., on Carriages, Field, Marks I*, I** and II, Land Service, 1922. 3s. 6d. Amendments No. 1. Sept. 1922. *Gratis*. Amendments No. 2. March 1923. 1d.; Amendments No. 3. May 1923. 1d.
- 18-pr. Mark IV Gun on Marks III, III*, III^v, IV and V. Field Carriage Land Service. 1924. 2s. 6d. Amendments No. 2. 1926. 1d.; No. 4. Feb. 1926. 2d.; No. 6. Sept. 1928. 3d. Nos. 7, 8 and 9. 1d. each.
- 18-pr. Q.F. Gun. Mark IV, Carriages. Marks III^v, IV and V, 1928. Amendment No. 1. Jan. 1929. 1d.
- 18-pr. Q.F. Marks I to II* Guns on Mark I to II Field Carriages (Land Service), March 1929. 5s. 6d. Amendments Nos. 1 and 2. 1d. each.

Guns, Handbooks for—continued.

- 60-pr. B.L. Marks I to I** Guns, on Marks I and III Field Carriages (Land Service), 1928. 10s. Amendments Nos. 1 and 2. 1d. each.
- 60-pr. B.L. Marks II and II* Guns on Mark IV Field Carriage. 10s. 6d. Amendments No. 1. 2d. Amendments No. 2. 2d.; Amendments No. 3. Nov. 1922. 2d.; Amendments No. 4. March 1923. 2d.
- 60-pr. B.L. Marks II and II* Guns on Mark IV Travelling Carriage. Land Service, 1926. 12s. 6d. Amendments No. 1. June 1927. 2d.; No. 1. Aug. 1928. 2d. No. 2. Jan. 1930. 1d. No. 3. June 1930. 2d.

Gun Drills :—

- 2-75-inch B.L. Gun, Converted Mark I and Mark I, Carriage, Mark I. Feb. 1923. 6d. Amendment. 1d. Amendments, July 1924. 1d.
- 3-inch 20-cwt. Q.F. A.A. Gun, Marks I and III, on (a) Motor Lorry Mounting; (b) Fixed Mounting or Travelling Platform. Oct. 1923. 4d.
- 3-7-inch Q.F. Howitzer, Mark I, Carriage, Mark I. 1928. 9d. Amendments No. 1. April 1931. 1d.
- 4-inch Q.F. Mark III Gun (Land Service), 1924. 8d. Amendment No. 2. Jan. 1928. 1d.
- 4-inch Q.F. Gun, Mark V (Land Service), 1924. 3d.
- 4-5-inch Q.F. Howitzer, Marks I and II, Carriage, Mark I and IA. April 1928. 6d. Amendments No. 1. April 1931. 1d.
- 4-7-inch Q.F. Gun (Land Service), 1924. 4d. Amendment No. 2. Jan. 1928. 1d.
- 6-inch B.L. 26-cwt. Howitzer, Mark I, Carriage Mark I, 60-pr. B.L. Gun, Marks II and II*, Carriage Mark IV, 1929. 8d. Amendments No. 1. April 1931. 1d.
- 6-inch B.L. Marks VII and VII* Guns on Carriages Garrison C.P., Mark II. (Land Service.) 1922. 6d. Amendment. April 1924. 1d.; Jan. 1927. 1d.; No. 1. 1d.; No. 3. 1d.
- 6-inch B.L. Gun, Mark XIX, Carriages, Marks VIII and VIIIA. 9d.
- 6-inch B.L. Gun, Mark XIX, Carriages Marks VIII and VIIIA, and 8-inch B.L. Howitzer, Marks VII, VII*, VII** and VIII, Carriages Marks VII and VIIA. May 1929. 1s. 3d. Amendments No. 1. April 1931. 1d.
- 6-inch "B" Q.F. Guns on Carriages, Garrison C.P., Mark II (Land Services), 1924. 4d.
- Mortar Drill for 6-inch Medium Mortar, Marks I, II and III. Jan. 1923. (G.D. 52.) 2d.
- 8-inch B.L. Howitzer, Marks VII, VII*, VII** and VIII. Carriages, Marks VII and VIIA. 1923. 6d. Amendment No. 1. 1d.
- 9-2-inch B.L. Marks X, X* and X* Guns on Mark V Mounting (Land Service). 1926. 6d. Amendments Nos. 3 to 7. 1d. each.
- 9-2-inch B.L. Marks X, X* and X* Guns on Mark VI Mounting (Land Service). 1926. 9d. Amendments No. 3. Jan. 1927. 1d.; No. 4. Jan. 1929. 1d.; No. 6. 1d.
- 9-2-inch B.L. Howitzer, Mark II, Carriage, Siege, Mark II. 9d. Amendment No. 1. 1d.

Gun Drills—continued.

- 9-2-inch B.L. Howitzer, Mark II, Carriage Mark II. 1929. 1s. 3d.
- 12-pr. 12-cwt. Q.F. Gun (Land Service). 1925. 6d. Amendment Jan. 1928. 1d.
- 13-pr. Q.F. Gun, Marks I and II, Carriage Mark I, and 18-pr. Q.F. Gun Marks I to II, Carriages, Marks I, I*, I** and II. 1928. 9d. Amendment No. 1. June 1929. 1d. No. 2. April 1931. 1d.
- 18-pr. Q.F. Mark IV. Carriages, Marks III, IV and V. 1928. 6d. Amendment No. 1. Jan. 1929. 1d. No. 2. April 1931. 1d.
- 18-pr. Q.F. Gun, Mark IV, Carriage, Mark V. 3d. Amendments, Feb. 1925. 1d.
- 60-pr. B.L., Marks I-I**, Carriages, Marks I and III. 6d. (6d.) Amendment. 1d. Amendment No. 1. Jan. 1928. 1d.
- 60-pr. B.L., Marks II and II*, Carriages, Mark IV. 1923. (G.D. 46.) 3d.
- 60-pr. B.L. Gun, Marks II and II*. Carriage Mark IV. Amendments, No. 1. April 1924. 1d.; Jan. 1926. 1d.
- Amendments :—Feb. 1922. 1d.; Feb. 1925. 1d.; May 1925. 1d. Jan. 1926. 2d.; Jan. 1926. 1d.
- See also MACHINE GUNS; MUSKETRY REGULATIONS, Part I; and ROSS MAGAZINE.

Health of the Army. Report for the year 1922, Vol. LVIII. 3s.

Do.	Do.	1923, Vol. LIX. 3s. 6d.
Do.	Do.	1924, Vol. LX. 3s. 6d.
Do.	Do.	1925, Vol. LXI. 3s. 6d.
Do.	Do.	1926, Vol. LXII. 3s. 6d.
Do.	Do.	1927, Vol. LXIII. 4s. 6d.
Do.	Do.	1928, Vol. LXIV. 5s.
Do.	Do.	1929, Vol. LXV. 3s.

Height and Range-Finder. No. 2, Mark II, Type U.B.2 (Barr and Stroud). Handbook. Jan. 1927. 1s.**Historical Records of the British Army :—**

- Horse Guards. 5s.
- Dragoons, 1st, 3rd, 14th, and 16th. 4s. each. 13th. 3s.
- Marine Corps. 3s.
- Foot, 10th, 11th, 12th, 13th, 15th, 16th, 17th, 18th, 19th, 21st, 22nd, 36th, 39th, 53rd, 67th, 71st, 72nd, 73rd, 86th, and 87th. 4s. each.
- 56th, 61st and 70th. 3s. each.

Histories, Short, of the Territorial Regiments of the British Army. 69 numbers, each 1d. (2d.)

- Do. The Scots Guards. 1d.
- Do. The 6th (Inniskilling) Dragoons.

(Out of print)

History of the Great War. See WAR.**Horsemastership, Manual of.** 1929. 9d.**Horses, Field, Pack, Medium and Heavy Artillery.** Instructions for Practice (including Movable Armament). Feb. 1921. 3d.**Hot Water Supply and Heating Installations for W.D. Purposes.** Notes on, March 1929. 1s.**Hygiene.** Manual of Military. 1921. 1s.
See also PHYSIOLOGY and SCHOOLS.

- Indian Empire, The.** A short Review and some Hints for the use of Soldiers proceeding to India. 6d. (7d.)
Do. Amended 1911 Version. A short Review and some Hints for the use of Soldiers proceeding to India. 6d.
- Infantry Training.** Vol. 1. Training. 1926. Amendments Nos. 1 to 5. 1d. each. (Out of print.)
Do. Vol. 2. War. 1926. 9d. Amendments (No. 2). Jan. 1927. 1d.; No. 4. Feb. 1928. 1d.; No. 5. Jan. 1929. 1d.; No. 6. Jan. 1930. 1d.
- Institutes, Garrison and Regimental.** Rules for the Conduct of. February, 1929. 1d.
- Italian Cavalry Training Regulations.** 1911. Training for Marches, Tactics of Minor Units and Training of Patrols. Translated. 4d.
- Jamaica, Standing Orders.** 1912. 1s.
- Jersey Militia of the Island of.** Regulations. 1914. With the Jersey Militia Laws, 1905. 1s. 3d.
- King's Regulations for the Army and the Army Reserve.** 1928. 1s. 9d. Amendments. Nos. 1 to 33. 1d. each.
- King's Regulations, 1928.** Comparative Table. June 1928. 1d.
- Kit Plates:**
Artillery Royal:—
 (6) Garrison. Kit laid out for Inspection. 1909. (Out of print)
 (10) Do. Kit in Barrack Room. 1909. 2d.
- Cavalry.** 1891. 1d.
- Engineers, Royal:—**
 No. 1. Dismounted. Details of Shelf and Bedding, with Marching and Drill Orders ready to put on. 1914. Each 1d.
 No. 2. Dismounted Personnel, 1930. Kit Plate. 2d.
 No. 4. Mounted Personnel, 1930. Kit Plate. 2d.
 No. 5. Mounted. Detail of Shelf and Bedding. 1910. 1d.
 No. 6. Driver, with pair of Horses, Field Kit laid out for Inspection on Parade, including Articles carried in Valise in Baggage Wagon. 1915. 2d.
- Medical Corps. Royal Army.** Kit in Barrack Room. 1913. 2d.
- Ordnance Corps. Royal Army.** For guidance of Marching Order and Kit Inspections. 2d.
 Kit in Barrack Room, with arrangement of Locker for Daily Inspection. 2d. Boys 2d.; Men 2d.
 Kit in Barrack Room, with arrangement of Shelf for Daily Inspection. 2d.
 Kit laid out for Inspection. 2d.
- Land and Air Forces of the British Oversea Dominions, Colonies, Protectorates, and Mandated Territories (exclusive of India and Iraq).** Notes. 1930. 3s.

- Large Formations.** The Operations of. (Conduite des Grandes Unités.) Translated from the Field Service Regulations of the French Army dated Oct. 28, 1913. 6d.
- Law.** Manual of Military. 1929. 3s. 6d.
- Do. Amendments;** April 1929. 1d.; June 1929. 1d.; Sept. 1929. 1d.
- Machine Gun Training.** 1925. 1s. Amendments No. 1. Jan. 1927. 1d. No. 2. Dec. 1927. 2d.; No. 3. May 1928. 2d.; Nos. 4 to 6. 1d. each. Supplement. March 1930. 2d.
- Magazine Regulations.** 1922. 1s. 6d. Amendments. Nov. 1923; Feb. 1924; Dec. 1924; April 1925; Aug. 1925; Oct. 1925; Nov. 1926; March 1927. Each 1d. Nos. 1* to 5. 1d. each.
- Malaria.** Observations on, by Medical Officers of the Army and Others. (With Plates and Diagrams.) 1920. 6s.
- Manceuvres, Army.** Report 1925. 4s. 6d.
- Mapping from Air Photographs.** 4s.
- Map Reading and Field Sketching.** Manual. 1921. 3s. See also PROTRACTOR.
- Mechanical Transport.** See TRANSPORT.
- Mechanical Vehicles.** Maintenance Handbook for, 1930. 4d. Amendments Nos. 1, 2, 3. 1d. each.
- Medical Corps. Royal Army.** (See also TERRITORIAL FORCE):—
 Admission to. Regulations for. 1926. 2d. Amendments No. 1. July 1929.
 Royal Army Medical Corps (T.A.) and the Army Dental Corps. Standing Order. 1930. 2s.
 Training. 1925. 1s. Amendments. Sept. 1926. 1d.; No. 1. Dec. 1928. 1d.
- Medical Department. Army.** Index to Appendices of Reports from 1859 to 1896. 3d.
- Medical Diseases. In Tropical and Sub-Tropical Areas.** Memoranda on. (Fourth Edition.) 1930. 6s.
- Medical History of the Great War.** See WAR.
- Medical Service. Army:—**
 Regulations. 1923. 1s. 6d. Amendments, Aug. 1925. 1d.; Jan. 1927. 1d. No. 1*. Sept. 1927. 1d.; No. 2. Sept. 1927. 1d.; No. 3. Nov. 1927. 1d.; No. 4. Dec. 1927. 1d.; No. 5. Jan. 1928. 1d.; No. 6. Feb. 1928. 1d.; Nos. 8 to 32. 1d. each.
- Medical Service.** Strategical and Tactical Employment of the, as carried out in an Army Corps; with a Series of Problems. Translated from the Austrian. 4s. 6d.

- Medical Services, Army.** Advisory Board for. The Treatment of Venereal Disease and Scabies. First Report. 1904. 1s. 6d.; Second Report. 1905. 2s.; Third report. 1905. 1s.; Final Report. 1906. (Out of print)
- Medical Services of Foreign Armies.** Handbook of:—
Part I. FRANCE. 6d. Part II. GERMANY. 6d. Part III. AUSTRIA-HUNGARY. 6d. Part IV. RUSSIA. 6d. Part V. ITALY. 6d. Part VI. THE NETHERLANDS AND BELGIUM. 6d.
- Mekometer Handbook.** 1911. 6d.
- Mesopotamia.** Some Impressions of, in 1919. (1920.) 9d.
- Mesopotamia Campaign, 1914-18.** See at end.
- Military and other Terms.** See SCHOOLS.
- Military Cooking and Dietary.** Manual of. Sept. 1924. 6d.
- Military Lands Acts, 1892 to 1903.** Byelaws. See ARTILLERY AND RIFLE RANGES Act, etc.
- Militia Regulations, 1911.** Amendment. Order by His Majesty dated Oct. 1927. 1d.
- Mine Rescue Work on the Western Front.** 5s.
- Mounted Troops (Divisional Training).** June 1915. Provisional. 1d.
- Movement Manual (War).** Aug. 1923. 1s. Amendment No. 1. Jan. 1928. 1d.
- Night Operations.** Elementary Training in. 1911. 1d. (2d.)
- Number of Troops to the Yard** in the principal battles since 1850. Memo. on. With opinions of Modern Authorities on limits of extension at the present day. 1884. 9d.
- Nursing Service.** Queen Alexandra's Imperial Military. Regulations for Admission to the, 1927. 1d. See also TERRITORIAL FORCE.
- Nursing in the Army.** 1930. 3d.
- Officers died in the Great War, 1914-19:—**
Part I. Old and New Armies } 7s. 6d.
Part II. Territorial Force }
- Officers Training Corps:—**
Regulations. 1921. Reprinted with Amendments to Jan. 1925. 1s. Amendments No. 1. Oct. 1925. 1d.; No. 4. Feb. 1926. 2d.; No. 6. Nov. 1926. 2d.; May 1927. 3d.; July 1927. 1d.; No. 1*. Dec. 1927. 1d.; No. 3. July 1928. 1d.; No. 4. Aug. 1928. 3d. Nos. 5 to 11. 1d. each.
- Special A.O.,** March 16, 1908. 1d.
- Junior Division.** Instructions for the Annual Camps. 1925. 6d. Amendment No. 1*. Oct. 1927. 1d.; No. 2. July 1928. 1d.; No. 3. Dec. 1928. 1d.; No. 4. March 1929. 1d.; No. 5. May 1929. 1d.; No. 6. 1d. Report on the Examination for Certificate "A" held in March 1920, for Cadets of the Junior and Senior Division. 1s.

- Optics and their Application to Service Instruments.** Elementary Notes compiled for use in the Range-finding Branch, Military College of Science, Woolwich, 1927. 3s.
- Orange Free State Topographical Survey, 1905-1911.** Report on the 10s.
- Ordnance College.** See also ARTILLERY COLLEGE:—
Advanced Classes, Reports on:—
Up to the 33rd. Each 1s.
34th. 6d.
35th. 1s.
36th and later. See ARTILLERY COLLEGE.
Artificers. Military. Handbook for. 10th Edition. 1915. 9d.
Ordnance Courses, Reports on:—
Up to the 16th. Each 1s.
17th. 9d.
18th and 19th. 1s. 6d. each.
Regulations. 1907. 2d.
- Ordnance Corps.** Royal Army. Standing Orders. 1929. 6d.
- Ordnance Duties.** A Course of 3 Lectures given to the Army Class. London School of Economics. 1925. 1s. 9d.
- Ordnance Manual (War).** 1914. 6d.
- Ordnance Services.** Army. Regulations:—
Part I. 1929. 2s. Amendments Nos. 1 to 9. 1d. each. No. 11. 1d.
- Outfit Allowance** for Retired Officers, Officers temporarily commissioned and other Officers employed during a National Emergency. Royal Warrant dated Oct. 25, 1927. 1d.
- Parliamentary Candidatures.** Royal Warrant dated Sept. 21, 1927. 1d.
- Pathological Specimens** in the Museum of the Army Medical Depart., Netley. Descriptive Catalogue of. Third edition. Vol. I. By Sir W. Aitken, M.D., 1892. 5s.
- Pay. Allotments of.** See SEPARATION ALLOWANCE.
- Pay, Appointment, Promotion and Non-Effective Pay of the Army.** Royal Warrant, 1926. 1s. 6d. Amendments No. 2. 1927. 1d.; No. 5. Oct. 1927. 1d.; No. 6. Nov. 1927. 1d.; No. 7. Nov. 1927. 1d.; No. 8. Jan. 1928. 1d.; Nos. 9, 10 and 11. Dec. 1927. Each 1d.; Nos. 13 to 87. 1d. each.
- Pay Duties Manual.** Instructions relating to the Pay Duties of Sub-Accountants responsible for making payments to Military and Civilian Personnel. 1926. 4d. Amendments Nos. 1 to 10. 1d. each.
- Pay and Allowances.** Royal Warrant dated Oct. 28, 1927. 1d.

Peace Establishments :—

- Part I. Regimental Establishments of the Regular Forces for 1930-31. 5s.
 Part II. 1929-30. Section 1. Bermuda Militia Artillery, Bermuda Local Engineers, Bermuda Volunteer Rifle Corps, Malta Division R.E. and King's Own Malta Regiment. Section 2. Territorial Army. Section 3. Supplementary Reserve. 1s. 6d. Amendment No. 1. 2d.
 Part III. Departmental and Miscellaneous Regular Establishments and Instructional Institutions, 1928-29. 9d.
 Changes in Parts I and III. 1926-27. Oct. 1926. 2d.
 Part IV. Headquarters Establishments. Home and Abroad. February 1929. 1s. 3d.

Pharmacists in the Army. Report of the Committee appointed to consider employment. 1s.

Physical Examination of Recruits. Instructions for the. 2d. Amendments Nos. 1 and 4. 1d. each.

Physical Training Table Card. June 1929. 3d.

Physical Training. Manual of. 1931. 3s.

Physical Training for Trained Soldiers of all Arms. 1929. 1d.

Physiology, Elementary, in its relation to Hygiene. Feb. 1919. 2d.
See also HYGIENE and SCHOOLS.

Place-Names occurring on Foreign Maps. Rules for the Transliteration of. 1919. 1s. 6d.

Plotting from Air Photographs. Graphic Methods of. 1925. 3s.

Postal Services. Manual of Army. War, 1912. (Reprinted, with Amendments, 1915.) 3d.

Procedure, Rules of. 1926. 6d. Provisional Amendments. April 1928. 1d.; No. 2. June 1928. 1d.

Procedure, Revised Rules of. Notes on the Principal Amendments. Oct. 1926. 1d.

Projection, etc. Linear Perspective. A Text-Book for use of the R.M. Academy. Part I.—Text. Part II.—Plates. 1904. 6s.

Promotion of Lieutenants of the Army Veterinary Corps, Special Reserve, and Territorial Forces. *See FIELD ALLOWANCE.*

Protractor. Service. For use in Map Reading Classes. 1d.
See also MAP READING.

Publications (Recent) of Military Interest. List of. Quarterly. Nos. 1 to 8 (except 1, 3, 5 and 6, out of print). 2d. each; Nos. 9 to 17, 4d. each.
Continued by THE ARMY REVIEW.

Railway Manual (War). 1911. (Reprinted, with Amendments, 1914.) 6d.

Range Finder. Handbooks—

- Artillery, No. 2. (Barr & Stroud). 1926. 9d. Amendments No. 1. Feb. 1927. 1d.
 Infantry, No. 1. (Marindin). 1913. 3d.
 Do. No. 2. (Barr & Stroud). 31.5 inches base. 1916. 6d. Amendments, July 1926. 1d.; Feb. 1927. 1d.

Range Table. Part II. 1923. 9d.

Ranges. Miniature Cartridge. (Reprinted from THE ARMY REVIEW, January 1914.) 3d.

Ranging. Examples of. *See ARTILLERY, TRAINING, FIELD.*

Rations. Army. Their Bearing on the Efficiency of the Soldier. By D. Noel Paton, M.D., F.R.S., Professor of Physiology, University of Glasgow. 3d.

Recruiting for the Regular Army. Regulations 1928. 6d. Amendments Nos. 1 to 8. 1d. each.

Recruits. Instructions for the Physical Examination and Discharge of Recruits with less than six months' service, considered unfit on Medical Grounds. June 1926. 2d.

Recruits' Table Card, Feb. 1922. 4d.

Remount Manual (War). Aug. 1923. 2d.

Remount Regulations. 1924. 9d. Amendments No. 1*. Oct. 1927. 1d.; No. 1. March 1928. 1d.; Nos. 3 to 6. 1d. each.

Remount Service and its Duties in Peace and War. Organisation. Lecture given to the Army Class. London School of Economics. Lent Term. 1925. 6d.

Research Department, Woolwich. Reports :—

22. (Part III). Viscosity of Cellulose. 1s. 9d.
35. Influence of Chromium on Steel. 7s. 6d. (Out of print)
45. Elastic properties of Steel. Effect of Overstrain on the. 2s.
46. Vent Sealing Tubes. Part I. Results of Investigation in the Causes of Failure by Splitting on Firing. (Out of print)
48. Heat Treatment of Carbon Gun Steels. 6s. 6d.
49. Heat Treatment of Nickel Gun Steel. (In the Press)
51. The Properties of some Chromium Steels. 3s.
52. Coolidge Radiator Tube. Investigation into the Behaviour of the. 1s. 6d.
54. Recovery of Elasticity by Iron and Steel after Overstrain. 2s. 6d.
55. Properties of some Nickel Chromium Steels. 7s. 6d.
56. X-Ray Installation for Veterinary Practice and Research. 1s. 6d.
57. German Gun Steels. 3s.
60. Gun Wire. 2s. 6d.
61. The Properties of Medium Carbon Steel with High Manganese Content. 1s. 6d.
62. A High Vacuum Pump and its Mode of Action. 1924. 1s. 3d.
63. Part I. Description and Discussion of Air Disturbance round Bullets in Free Flight. 1925. 4s.
64. Behaviour under Compression of Service Copper Crushers. 4s. 6d.
65. The Influence of Tungsten on the properties of Medium Carbon Steels containing Nickel and Chromium. 1925. 4s.
67. Influence of Molybdenum on Medium Carbon Steels containing Nickel and Chromium. 1906. 3s. 6d.
68. Portable X-Ray Equipment. 1926. 1s. 6d.
71. Survey of Radiological Research in the Research Dept. Woolwich. 1s. 6d.

Review of New Orders, Decorations and Gallantry Medals, etc. (Revised Nov. 1920.) 3d.

- Rifle. Ross Magazine** -303-Inch, Mark IIIb. Handbook of the. 1915. (Reprinted, with Amendments, 1917.) 1d.
- Rifles, Short and Charge-Loading, Magazine, Lee-Enfield.** Handbook for Serjeant-Instructors of Special Reserve, Officers' Training Corps, and Territorial Force in regard to the Care, Inspection, etc., of. 3d.
- Russo-Japanese War :—**
Medical and Sanitary Reports from Officers attached to the Japanese and Russian Forces in the Field. 1908. 5s.
- Official History :—**
 Part I. Causes of the War. Opening events up to and including the Battle of the Ya-lu. Second Edition. 1909. 1s. 6d. (*Out of print*)
 Part II. From the Battle of the Ya-lu to Liao-yang, exclusive. 1908. 5s.
 Part III. The Siege of Port Arthur. 1909. 4s. 6d.
 Part IV. Liao-yang. 1910. 4s.
 Part V. Sha Ho. 4s. 6d.
- Naval and Military :—**
 Vol. I. To Aug. 2, 1904. With case of Maps. 15s.
 Vol. II. Liao-yang, the Sha-ho, Port Arthur. With case of Maps. 15s.
 Vol. III. San-De-Pu, Mukden, The Sea of Japan. With case of Maps. 70s.
 (*Published at the above prices. Now offered at the reduced price for the 3 Vols., £3 3s., post free.*)
- Reports from British Officers** attached to the Japanese and Russian Forces in the Field. In 3 Vols., with two cases of Maps (*not sold separately*). 21s.
- Of the above Reference Books the Naval and Military gives the most accurate and up-to-date account.
- Salisbury Plain.** Standing Orders applicable to all Troops Encamped on Salisbury Plain and applicable generally to Troops Quartered at Bulford. 1925. 1s. Amendment, Jan. 1926. 1d.
- Sanitation.** Army, Manual of. 1926. 6d.
- Scabies.** See MEDICAL SERVICE.
- Schools, Army :—**
 Annual Reports on, or 1911-12 and 1912-13. Each 1s.
 Military and other Terms, and Words which occur in Orders. Lists of. 1914. (*Reprinted* 1918.) 3d.
 Physiology. Handbook of Elementary. 1901. 1d.
 See also HYGIENE; PHYSIOLOGY; and (*below*) SCHOOL HYGIENE.
 Regulations. 1911. 4d.
 School Hygiene. Handbook of. For Teachers. 1907. 6d.
 See also HYGIENE; PHYSIOLOGY; and (*above*) PHYSIOLOGY.
 School mistresses and Pupil Teachers in, Information for the guidance of Candidates, etc. 1d.
 Singing in. Regulations for Teaching. 1911. (*Reprinted* 1915.) 1d.
 Standing Orders for Inspectors, Examiners, and Teachers. 1910. 6d.
- Screws.** Provision of Standard Leading, for Screw-cutting Lathes. Report of Committee. 1905.
- Section Leading.** 1928. Guide for the training of Non-Commissioned Officers as Commanders of Rifle and Lewis Gun Sections. 3d. Amendment No. 1. Jan. 1929. 1d.

Seniority Lists, Royal Artillery. 1931 :—

- Artificers, R.A. 3d.
 Assistant Instructors in Gunnery. 2d.
 Battery Quartermaster-Serjeants and Serjeants. 6d.
 Farriers. 2d.
 Master Gunners, 3rd Class. 2d.
 Saddlers. 2d.

Seniority Lists, Royal Horse Artillery. 1931.

- Battery Quartermaster-Serjeants and Serjeants. 2d.
 Warrant Officers, Class II. 1d.

Service Corps. Royal Army :—

- Regimental Standing Orders. 1922. 9d. Amendments. May 1930. 1d.
 Do. A.S.C. Memorandum. No. 25. 1d.
 Do. Amendments. July 1923. March 1924. July 1924. Feb. 1926. April 1927. April 1928. June 1929. Each 1d.
 Training. Part I. 1909. (*Reprinted, with Amendments, 1915.*) 9d.
 Do. Part II. Supplies. 1922. 3s. Amendments. May 1925. 2d.
 Do. Nos. 2 to 4. 1d. each.
 Do. Part III. Animal Transport. March 1922. 2s. 6d.
 Do. Part IV. Mechanical Transport. (*Out of print*)
 Do. Part IV, A. Mechanical Transport (Technical). 1925. 2s.
 Do. Part IV, B. Mechanical Transport (The Motor Cycle). 1s.
 Do. Part IV, C. Mechanical Transport (Maintenance, Upkeep and Operation). 1925. 6d.
 Do. Part IV, D. Mechanical Transport (Overseas Establishments, Depôts and Parks). 1926. 6d.

Sevastopol. Siege of. 1854-55. 3 Vols., with case of Maps and Plans. Half Morocco, £5 4s. Cloth, £4 4s.

Or separately :—

- Vol. I. Engineer Operations. 26s.
 Vol. II. Engineering Operations. With case of Maps and Plans. 50s.
 Vol. III. Artillery Operations. 10s.

Sewage. Practical Treatment of. The latest development of. 1906. 6d.

Shoeburyness Garrison. Standing Orders. 1913. 1s. 6d.

Siege Operations in the Campaign against France. 1870-71. (*Von Tiedemann.*) Translated. 4s. 6d.

Signal Training :—

- Vol. I. 1926. Organisation and Inter-Communication in the Field. 6d.
 Vol. II. Part I. Theory of Electricity and Magnetism as applied to Telegraphy and Telephony. Dec. 1923. 6d. Amendments No. 1. Jan. 1928. 1d.
 Part II. Theory of High Frequency Currents as applied to Wireless Telegraphy and Wireless Telephony. 1924. 6d.
 Part III. Power Supply for Field Wireless Sets. Nov. 1926. 3d.
 Part IV. (Provisional.) Line Telegraphy and Telephony Lines. 2s. Amendments. Nov. 1924. 1d.; April 1925. 1d.
 Part VI. 1918. 1s.
 Part VII. (Provisional.) Signal Organisation. 6d.

Signal Training—continued.

Vol. III. Pamphlets :—

- No. 1. Telephone. Set D. Mark III*. 1926. 1*d*. Amendments No. 1. 1*d*.
 No. 2. Heliograph. 5-inch. Mark V. 2*d*.
 No. 3. Fullerphone. Mark III*. Feb. 1923. 3*d*.
 No. 4. Switchboard, Field, 10 Line (Mark 236). July 1923. 2*d*. Amendments No. 1. Oct. 1929. 1*d*.
 No. 7. Lamp, Signalling, Daylight. 1927. 2*d*. Amendment No. 1. Jan. 1929. 1*d*.

Vol. IV. 1927. Construction and Maintenance of Lines. 1*s*.

Small Arms, Textbook of May 1929. 5*s*.

Small Arms Training. Vol. I. 1924. (*Out of print.*) Amendments Nos. 1 to 7. 1*d*. each.

Do. Vol. II. 1924. 1*s*. Amendments No. 1. Feb. 1925. 1*d*.; No. 2. Jan. 1926. 1*d*.; No. 3. (Appendix No. 1.) Jan. 1926. 2*d*.; No. 4. Jan. 1927. 1*d*.; No. 6. Feb. 1928. 2*d*.; No. 7. Feb. 1928. 1*d*.; No. 8 (Appendix 1.) Dec. 1928. 4*d*.; Nos. 9 to 11. 1*d*. each.

Do. Vol. III. Small Arms Range Regulations. 1924. 1*s*. (Amendments No. 1, published in Army Orders, June 1925.) Amendments Nos. 2 to 7. 1*d*. each.

Small Wars. Their Principles and Practice, Third Edition. 1906. (Reprinted 1914.) 4*s*.

Smoke. Manual on the Use of. July 1923. 2*d*.

Soldiers Disabled and Discharged in France. See DISABLED.

Soldiers Died in the Great War, 1914-19 :—

Part 1. Household Cavalry and Cavalry of the Line (including Yeomanry and Imperial Camel Corps). 5*s*.

Part 2. Royal Horse and Royal Field Artillery, Regulars and Territorial Force (including Honourable Artillery Company Batteries). 15*s*.

Or separately :—

Section 1. A to C. 2*s*. 6*d*.

Section 2. D to H. 2*s*. 6*d*.

Section 3. I to N. 2*s*. 6*d*.

Section 4. O to S. 2*s*. 6*d*.

Section 5. T to Y. 2*s*. 6*d*.

Section 6. Royal Horse and Royal Field Artillery, Territorial Force (including Honourable Artillery Company Batteries). 2*s*. 6*d*.

Part 3. Royal Garrison Artillery. 7*s*. 6*d*.

Part 4. Corps of Royal Engineers. 7*s*. 6*d*.

Part 5. Foot Guards (including Guards' Machine Gun Regiment). 7*s*. 6*d*.

Part 6. The Royal Scots (Lothian Regiment). 7*s*. 6*d*.

Part 7. The Queen's (Royal West Surrey Regiment). 5*s*.

Soldiers Died in the Great War, 1914-19—continued.

- Part 8. The Buffs (East Kent Regiment). 5*s*.
 Part 9. The King's Own (Royal Lancaster Regiment). 5*s*.
 Part 10. The Northumberland Fusiliers. 7*s*. 6*d*.
 Part 11. The Royal Warwickshire Regiment. 7*s*. 6*d*.
 Part 12. The Royal Fusiliers (City of London Regiment). 7*s*. 6*d*.
 Part 13. The King's (Liverpool Regiment). 7*s*. 6*d*.
 Part 14. The Norfolk Regiment. 5*s*.
 Part 15. The Lincolnshire Regiment. 5*s*.
 Part 16. The Devonshire Regiment. 5*s*.
 Part 17. The Suffolk Regiment. 5*s*.
 Part 18. Prince Albert's (Somerset Light Infantry). 2*s*. 6*d*.
 Part 19. The Prince of Wales's Own (West Yorkshire Regiment). 7*s*. 6*d*.
 Part 20. The East Yorkshire Regiment. 5*s*.
 Part 21. The Bedfordshire Regiment. 5*s*.
 Part 22. The Leicestershire Regiment. 5*s*.
 Part 23. Royal Irish Regiment. 2*s*. 6*d*.
 Part 24. Alexandra, Princess of Wales's Own (Yorkshire Regiment). 5*s*.
 Part 25. The Lancashire Fusiliers. 7*s*. 6*d*.
 Part 26. The Royal Scots Fusiliers. 5*s*.
 Part 27. The Cheshire Regiment. 5*s*.
 Part 28. The Royal Welsh Fusiliers. 5*s*.
 Part 29. The South Wales Borderers. 5*s*.
 Part 30. The King's Own Scottish Borderers. 5*s*.
 Part 31. The Cameronians (Scottish Rifles). 5*s*.
 Part 32. The Royal Inniskilling Fusiliers. 5*s*.
 Part 33. The Gloucestershire Regiment. 5*s*.
 Part 34. The Worcestershire Regiment. 5*s*.
 Part 35. The East Lancashire Regiment. 5*s*.
 Part 36. The East Surrey Regiment. 5*s*.
 Part 37. The Duke of Cornwall's Light Infantry. 2*s*. 6*d*.
 Part 38. The Duke of Wellington's (West Riding Regiment). 5*s*.
 Part 39. The Border Regiment. 5*s*.
 Part 40. The Royal Sussex Regiment. 5*s*.
 Part 41. The Hampshire Regiment. 5*s*.
 Part 42. The South Staffordshire Regiment. 5*s*.
 Part 43. The Dorsetshire Regiment. 2*s*. 6*d*.
 Part 44. The Prince of Wales's Volunteers (South Lancashire Regiment). 5*s*.
 Part 45. The Welch Regiment. 5*s*.
 Part 46. The Black Watch (Royal Highlanders). 5*s*.
 Part 47. The Oxfordshire and Buckinghamshire Light Infantry. 5*s*.
 Part 48. The Essex Regiment. 5*s*.
 Part 49. The Sherwood Foresters (Nottinghamshire and Derbyshire Regiment). 7*s*. 6*d*.

Soldiers Died in the Great War, 1914-19—continued.

- Part 50. The Loyal North Lancashire Regiment. 5s.
 Part 51. The Northamptonshire Regiment. 5s.
 Part 52. The Princess Charlotte of Wales (Royal Berkshire Regiment). 5s.
 Part 53. The Queen's Own (Royal West Kent Regiment). 5s.
 Part 54. The King's Own (Yorkshire Light Infantry). 5s.
 Part 55. The King's (Shropshire Light Infantry). 2s. 6d.
 Part 56. The Duke of Cambridge's Own (Middlesex Regiment). 7s. 6d.
 Part 57. The King's Royal Rifle Corps. 7s. 6d.
 Part 58. The Duke of Edinburgh's (Wiltshire Regiment). 2s. 6d.
 Part 59. The Manchester Regiment. 7s. 6d.
 Part 60. The Prince of Wales's (North Staffordshire Regiment). 5s.
 Part 61. The York and Lancaster Regiment. 5s.
 Part 62. The Durham Light Infantry. 7s. 6d.
 Part 63. The Highland Light Infantry. 5s.
 Part 64. Seaforth Highlanders (Ross-shire Buffs, The Duke of Albany's). 5s.
 Part 65. The Gordon Highlanders. 5s.
 Part 66. The Queen's Own (Cameron Highlanders). 5s.
 Part 67. The Royal Irish Rifles. 5s.
 Part 68. Princess Victoria's (Royal Irish Fusiliers). 2s. 6d.
 Part 69. The Connaught Rangers. 2s. 6d.
 Part 70. Princess Louise's (Argyll and Sutherland Highlanders). 5s.
 Part 71. The Prince of Wales's Leinster Regiment (Royal Canadians). 2s. 6d.
 Part 72. The Royal Munster Fusiliers. 2s. 6d.
 Part 73. The Royal Dublin Fusiliers. 2s. 6d.
 Part 74. The Rifle Brigade (The Prince Consort's Own). 7s. 6d.
 Part 75. Machine Gun Tank Corps. 7s. 6d.
 Part 76. The Honourable Artillery Company (Infantry) The London Regiment, Inns of Court Officers' Training Corps. In one Volume. 15s.

Or in separate parts :—

- Section 1. 1st (City of London) Battn. (Royal Fusiliers). 1s.
 Section 2. 2nd (City of London) Battn. (Royal Fusiliers); 3rd (City of London) Battn. (Royal Fusiliers). 1s.
 Section 3. 4th (City of London) Battn. (Royal Fusiliers); 29th (City of London) Battn. (Royal Fusiliers); 30th (City of London) Battn. (Royal Fusiliers); Honourable Artillery Company (Infantry); Inns of Court Officers' Training Corps. 1s.
 Section 4. 6th (City of London) Battn. (Rifles). 1s.

Soldiers died in the Great War, 1914-19—continued.

- Section 5. 9th (County of London) Battn. (Queen Victoria's Rifles). 1s.
 Section 6. 11th (County of London) Battn. (Finsbury Rifles); 12th (County of London) Battn. (The Rangers). 1s.
 Section 7. 13th (County of London) Battn. (Princess Louise's Kensington Battn.); 15th (County of London) Battn. (Prince of Wales's Own Civil Service Rifles). 1s.
 Section 8. 16th (County of London) Battn. (Queen's Westminster Rifles); 31st, 32nd and 34th Battns. 1s.
 Section 9. 5th (City of London) Battn. (London Rifle Brigade). 1s.
 Section 10. 8th (City of London) Battn. (Post Office Rifles); 10th (County of London) Battn. (Hackney). 1s.
 Section 11. 17th (County of London) Battn. (Poplar and Stepney Rifles); 25th (County of London) Battn. (Cyclists); 28th (County of London) Battn. (Artists Rifles); 33rd Battn. 1s.
 Section 12. 7th (City of London) Battn.; 19th (County of London) Battn. (St. Pancras). 1s.
 Section 13. 20th (County of London) Battn. (Blackheath and Woolwich). 1s.
 Section 14. 21st (County of London) Battn. (First Surrey Rifles); 23rd (County of London) Battn. 1s.
 Section 15. 22nd (County of London) Battn. (The Queen's); 24th (County of London) (The Queen's). 1s.
 Section 16. 14th (County of London) Battn. (The London Scottish); 18th (County of London) Battn. (London Irish Rifles). 1s.
 Part 77. The Monmouthshire, Cambridge and Hertfordshire Regiments, Army Cyclist Corps. The Northern, Highland, Kent and Huntingdonshire Cyclist Battalions, and Royal Defence Corps. 2s. 6d.
 Part 78. Royal Army Service Corps. 5s.
 Part 79. Royal Army Medical Corps. 5s.
 Part 80. Labour Royal Army Ordnance, Royal Army Veterinary and Royal Army Pay Corps; Corps of Army Schoolmasters; Channel Isles Militia; Corps of Military Mounted and Foot Police; Corps of Small Arms School; Military Provost; Non-Combatant Corps; Queen Mary's Army Auxiliary Corps. 5s.

Somaliland :—

- Military Report on.** 1907. Vol. I. Geographical, Descriptive, and Historical. 2s.
Operations in, 1901-1904. Official History. Vol. I. 3s. Vol. II. 4s.

South African War, 1899-1902 :—

- Medical Arrangements. 7s. 6d.
 Medical History. An Epidemiological Essay. 3s. 9d. (Reprinted from "The Journal of the Royal Army Medical Corps.")
 Railways. 4s.
 Surgical Cases noted. 7s. 6d.
 Telegraph Operations. 10s.
 Voluntary Organisations in aid of the Sick and Wounded. Report of the Central British Red Cross Committee on. 1902. 3s.

Special Reserve. (See also ENTRANCE ; EXAMINATION ; RESERVE) :—
 Regulations for Officers of the Special Reserve of Officers and for the Special Reserve. 4d.

Staff College (Camberley) Regulations. 1930. 1d. Amendment No. 1. 1d.

Stations of Units of the Regular Forces, Militia, Special Reserve, and Territorial Force. Quarterly up to No. 45, July 1914. Each 2d.
 (Subsequent publication suspended.)

Statistics of the Military Effort of the British Empire. See WAR.

Statutes relating to the War Office and to the Army. 1880. 5s.

Statutory Powers of the Secretary of State, Ordnance Branch. 1879. 5s.

Sudan Almanac. 1930. 1s.

Sudan. Standing Orders for the British Force. 1914. 9d.

Sudan. The Anglo-Egyptian. A Compendium prepared by Officers of the Sudan Government :—

- Vol. I. Geographical, Descriptive, and Historical (with Eighty-two illustrations). 10s.
 Vol. II. Routes. 7s. 6d. (not including Chapter VII. Supplement (A)).
 Do. In Separate Chapters. 1s.
 I. and II. Nil ; III. North-Eastern Sudan ; IV. Eastern Sudan ;
 V. Central Sudan ; VI. South-Eastern Sudan ; VII. Bahr el Ghazal ; VIII. Kordofan ; IX. North-Western Sudan.
 Do. VII. Supplement (A). Bahr el Ghazal. Additional Routes. 1s.

Sudan Campaign. History of the. In two parts, with case of Maps. 1890. 15s.

Supplementary Reserve of Officers and the Supplementary Reserve. Regulations. 1926. 1s. Amendment No. 1. Oct. 1927. 1d. ; Amendments Nos. 2 to 26. 1d. each.

Supply Manual (War). 6d.

Supply. Transport, and Barrack Services. Regulations. 1930. 2s. 6d.
 Do. Amendments Nos. 1, 2, 4 and 5. 1d.

Survey Computations. 3rd Edition. 1926. 8s.

Surveying. Topographical and Geographical. Textbook of. 1925. 15s.

Tactical Rides and Tours on the Ground. The Preparation and Conduct of. Translated from the German. 1s. 3d.

Tactical Training, Elementary. Notes. Jan. 1925. 1d.

Tank and Armoured Car Training. Vol. I. Training. 1930. 1s. 3d.
 Do. Vol. II. Tank Gunnery. 1930. 6d.

Technical Papers :—

- I. Approximately Rigorous Adjustment of Simple Figures (with Diagrams). June 1919. 2s. 6d.

Territorial Force. (See also EQUIPMENT AND EXAMINATION) :—

- Annual Return for the Year ending Sept. 30, 1920. 4s.
 Cadet Infantry Training Manual. With notes on Physical Training, Physical Training Games and Scouting for Territorial Cadet Corps. 1927. 1s. 3d.
 Amendment No. 1. Oct. 1928. 1d.
 Cadet List. 1928. 2s. Amendment No. 1. March 1929. 1d.
 Cadet Units in the British Isles. Regulations governing the Formation, Organisation and Administration of. Sept. 1927. 2d. Amendments Nos. 1 to 3. 1d. each.
 Mobilisation of a Territorial Infantry Battalion. (Reprinted from THE ARMY REVIEW, July 1913.) 3d.
 Nursing Service. Standing Orders. 1930. 6d. Amendment. 1931. 1d.
 See also HOSPITALS AND NURSING SERVICE.

Territorial Army (including the Territorial Army Reserve) and County Associations Regulations, 1924. 1s. 6d. Amendments, Oct. 1925. 1d. ; Aug. 1926. (2 issues.) Each 1d. ; No. 1. Sept. 1927. 1d. ; No. 2. Oct. 1927. 1d. ; No. 3. Oct. 1927. 1d. ; No. 4. Nov. 1927. 1d. ; No. 5. Dec. 1927. 1d. ; No. 6. Jan. 1928. 1d. ; No. 7. Jan. 1928. 1d. ; No. 10. March 1928. 1d. ; No. 11. April 1928. 1d. ; No. 12. April 1928. 1d. ; No. 13. April 1928. 1d. ; No. 14. April 1928. 1d. ; No. 15. May 1928. 1d. ; No. 16. June 1928. 1d. ; No. 17. June 1928. 1d. ; No. 18. July 1928. 1d. ; No. 19. Aug. 1928. 1d. ; No. 20. Sept. 1928. 1d.

Do. 1929. 1s. 6d. Amendments Nos. 1 to 18. 1d. each.

Voluntary Aid :—

- Scheme for the Organisation of, in England and Wales. Dec. 1910. (Out of print)
 Do. Do. Amendments. 1d.
 Do. in Scotland. Oct. 1911. 2d.
 Do. Do. Amendments. 1d.

Tractor Trials held by the Experimental Sub-Committee of the Mechanical Transport Committee at Aldershot, Sept. and Oct. 1903. Report on. 6d.

Training and Manœuvre Regulations. 1923. 9d. Amendments, Jan. 1926. 1d. ; Dec. 1926. 1d. ; May 1929. 1d. ; No. 3. Aug. 1929. 2d. ; No. 4. June 1930. 1d.

Transport, Mechanical :—

Heavy Pontoon Bridge for use by. 1914. Provisional. 2d.
Maintenance Handbook. 1926. 2d.
Regulations for the Appointment of Inspectors of. 1d.

Transportation in War. A Course of 5 Lectures given to the Army Class London School of Economics. 1925. 1s. 6d.

Troops. See MOUNTED and NUMBER.

Trumpet and Bugle Sounds for the Army. With Instructions for the Training of Trumpeters and Buglers. 1927. 1s. 6d. Amendments No. 1. Jan. 1928. 1d.; No. 2. March 1928. 1d.; No. 3. July 1928. 1d.; No. 4. March 1929. 1d.; No. 5. June 1929. 1d.

Type Exercises. See SCHOOLS.

Typhoid (Anti-) Inoculation Committee. Report on Blood Changes following Typhoid Inoculation. 1905. 1s. 6d.

Valise Equipment. Instructions for Fitting Bandolier Pattern. 1903. 2d.
See also EQUIPMENT.

Valparaiso. The Capture of, in 1891. 1s.

Venereal Disease. See MEDICAL SERVICES.

Veterinary Corps. Royal Army. Standing Orders. 1930. 6d.
Do. Do. Regulations for Admission, 1930. 2d.
Do. Do. Amendments No. 1. 1d.

Veterinary Manual for War. April 1923. 2d. Amendment No. 1. 1d.

Veterinary Services. Army. Regulations. 1923. 4d. Amendments, March 1927. (In substitution of Appendix I.) 1d.; May 1927. 1d. Amendments Nos. 1 to 6. 1d. each.

Vocabulary of German Military Terms and Abbreviations. 1928. 5s.

Voluntary Aid. See TERRITORIAL FORCE.

Volunteer Acts, 1863, 1869, 1895, 1897 and 1900, except where repealed. Reprint of: Extracts from Regulation of the Forces Acts, 1871 and 1881, and Reserve Forces Act, 1890; and Order in Council of Feb. 5, 1872. 1d.

Volunteer List. Oct. 1919. 1s. 6d.

Voyage Regulations. 1928. 4d. Amendments Nos. 1 to 5. 1d. each.

War Graves Commission. Imperial :—

The Graves of the Fallen. Descriptive Account, by Mr. Rudyard Kipling, of the Work of the Commission; Illustrations by Mr. Douglas Macpherson, showing the Cemeteries and Memorials as they will appear when completed. 6d.

War Graves. How the Cemeteries Abroad will be Designed. Report. Nov. 14, 1918, by Lieut.-Colonel Sir Frederic Kenyon, K.C.B., Director of the British Museum. 3d.

War of 1914-20 :—

Despatches (Naval and Military) relating to Operations in the War :—

- I. Sept., Oct., and Nov. 1914. With List of Honours and Rewards Conferred. With Sketch Map. (Reprinted, 1921.) 1s. 6d.
- II. Nov. 1914 to June 1915. With Names of Officers mentioned and Awards of the Victoria Cross. 6d.
- III. July to Oct. 1915. With Names of Officers and Men mentioned, and Awards of the Victoria Cross. 3d.
- IV. Dec. 11, 1915. From General Sir Ian Hamilton, G.C.B., describing the Operations in the Gallipoli Peninsula, including the Landing at Suvla Bay. 2d.
- V. Jan. to April 1916. With Names of Officers and Men mentioned, and Awards of the Victoria Cross. 6d. (Out of print)
- VI. May to Dec. 1916. With Names of Officers and Men Awarded the Victoria Cross. 1s.
- VII. Dec. 1916 to July 1917. With Names of Officers and Men Awarded the Victoria Cross. 9d.
- VIII. July 1917 to June 1918. With Names of Officers and Men Awarded the Victoria Cross. 1s. 6d.
- IX. July to Dec. 1918. With Names of Officers and Men Awarded the Victoria Cross. 1s.
- X. Jan. 1919 to Jan. 1920. With Names of Officers and Men Awarded the Victoria Cross. 2s.

History of the War. Medical Services. (For other Official Histories published otherwise than through H.M. Stationery Office, see list at end.)

Diseases of the War. Vol. I. 21s.

Do. Vol. II. Including the Medical Aspects of Aviation and Gas Warfare, and Gas Poisoning in Tanks and Mines. 25s.

General History. Vol. I. Medical Services in the United Kingdom, in British Garrisons Overseas, and during Operations against Tsingtau, in Togoland, the Cameroons, and S.W. Africa. 21s.

Do. Vol. II. Medical Services on the Western Front, and during the Operations in France and Belgium in 1914 and 1915. 21s.

Do. Vol. III. Medical Services during the Operations on the Western Front in 1916, 1917 and 1918; in Italy; and in Egypt and Palestine. 21s.

Do. Vol. IV. Medical Services during the Operations in the Gallipoli Peninsula; in Macedonia; in Mesopotamia and North-West Persia, in East Africa, in Aden Protectorate; and in North Russia; Ambulance Transport during the War. 25s.

Hygiene of the War. Vol. I. 21s. Vol. II. 21s.

Pathology. 21s.

Do. Corrigenda (giving a list of references consulted in the preparation of Ch. IX, the Enteric Fevers). *Gratis*.

War of 1914-20—continued.

History of the War—*continued*.

Surgery of the War. Vol. I. 25s. Vol. II. 25s.

Veterinary Services. 21s.

Military Effort of the British Empire. Statistics of the. March 1922. 10s. 6d.

Parliament's Vote of Thanks to the Forces. Speeches delivered in the House of Parliament, Westminster, on Oct. 29, 1917. 1d.

War Office List, and Administrative Directory for the British Army, 1931. 4s.

Water (Hot) Supply and Heating Apparatus for W.D. Purposes. Notes on, 1927. 1s.

Waziristan Operations in 1919-20. 2nd Edition. 5s. This publication is obtainable direct from H.M. Stationery Office only.

Webley Revolver for the Personnel of the Royal Tank Corps. Instructions for the use of. 1926. 1s. Amendment No. 1. Jan. 1928. 1d.; No. 2. Aug. 1929. 1d.

Women's War Work in maintaining the Industries and Export Trade of the United Kingdom. Information officially compiled for the use of Recruiting Officers, Military Representatives and Tribunals. Sept. 1916. Illustrated. 1s.

Works Manual. War. 1913. Provisional. 4d. Appendix I. 1914. 1d.

Wounds of War. General Principles guiding the Treatment of. Conclusions adopted by the Inter-Allied Surgical Conference held in Paris, March and May, 1917. 2d.

Zulu War of 1879. Narrative of the Field Operations connected with the. 1881. (Reprinted, 1907.) 3s.

PUBLICATIONS OF THE IMPERIAL DEFENCE COMMITTEE.

Mesopotamia Campaign, 1914-18. Vol. I. 15s.

Do. Vol. II. (*Out of print*)

Do. Vol. III. 15s.

Do. Vol. IV. 15s.

Egypt and Palestine. Military Operations. Vol. I. 12s. 6d.
Do. Case of Maps. 5s. 6d.

Principal Events of the War, 1914-18. (Naval, Military, Air and Political.) In diary and index form. 10s. 6d. net.

(No Discount is allowed to Officers, Non-Commissioned Officers and Men on this item.)

OFFICIAL HISTORIES OF THE WAR

Published otherwise than through H.M. Stationery Office.

(No Discount is allowed to Officers, Non-Commissioned Officers and Men on these items.)

HISTORY OF THE GREAT WAR.

Based on Official Documents.

By direction of the Historical Section of the Committee of Imperial Defence.

MILITARY.

Military Operations. France and Belgium. 1914. By Brig.-General Sir James E. Edmonds, C.B., C.M.G.

Vol. I. Mons, the Retreat to the Seine, the Marne and the Aisne. Aug.-Oct. 1914. With Sketches. 12s. 6d. net.
34 General, Battle and Situation Maps in separate case. 12s. 6d. net.

Vol. II. Antwerp, La Bassée, Armentières, Messines and Ypres. Oct.-Nov. 1914. 12s. 6d. net.
40 General, Battle and Situation Maps in separate case. 5s. 6d. net.

Vol. III. Neuve Chapelle-Ypres, Dec. 1914-May 1915. 12s. 6d. net.
13 General, Battle and Situation Maps in separate case. 5s. 6d. net.

Vol. IV. Aubers Ridge-Festubert-Loos, 1915. 12s. 6d. net.
12 General, Battle and Situation Maps in separate case. 5s. 6d. net.

(Macmillan & Co., St. Martin's Lane.)

NAVAL.

Naval Operations. By Sir Julian S. Corbett, LL.M.

Vol. I. To the Battle of the Falklands, Dec. 1914. Together with a separate case including 18 larger Maps. 17s. 6d. net.

Vol. II. From the Battle of the Falklands to the entry of Italy in the war in May 1915. 21s. net.

Vol. III. Dardanelles campaign from May 1915 to the final evacuation, and the opening of the Salonica operations. Also Mesopotamian campaign to the Battle of Ctesiphon, operations in minor theatres, the German submarine campaign, and events in Home Waters up to and including the Battle of Jutland. 42s. (Text 21s. Maps 21s.)

Vol. IV. By Sir Henry Newbolt, C.H. Events in Home Waters from the Battle of Jutland to Feb. 1917. Unrestricted Submarine Warfare, Feb. to April 1917. The Mediterranean, June 1916 to Aug. 1917. Operations in minor theatres, and German Naval Policy, 1916-1917. (Text 16s. Maps 5s.)

(Longmans, Green & Co., 39, Paternoster Row.)

MERCHANT SERVICE.

The Merchant Navy. By Sir Archibald Hurd.

Vol. I. The Merchant Navy of the Past, cruiser attacks, submarine menace, early work of the Auxiliary Patrol, sinking of the "Lusitania." With illustrations and Maps. 21s. net.

Vol. II. From early months of 1915 to eve of German Declaration of Feb. 1917, of "unrestricted submarine warfare." With illustrations and Maps. 21s. net.

Vol. III. From the opening of the German "Unrestricted Submarine Campaign" to the end of the War. 21s. net.

(J. Murray, 50a, Albemarle Street.)

Seaborne Trade. By C. Ernest Fayle. (Complete in three volumes.)

Vol. I. The Cruiser Period. Maps in Case. 21s. net.

Vol. II. From the opening of the Submarine Campaign to the Appointment of the Shipping Controller. With Maps. 21s. net.

Vol. III. A Period of Unrestricted Submarine Warfare. With a Map and Statistical Diagrams. 21s. net.

(J. Murray, 50a, Albemarle Street.)

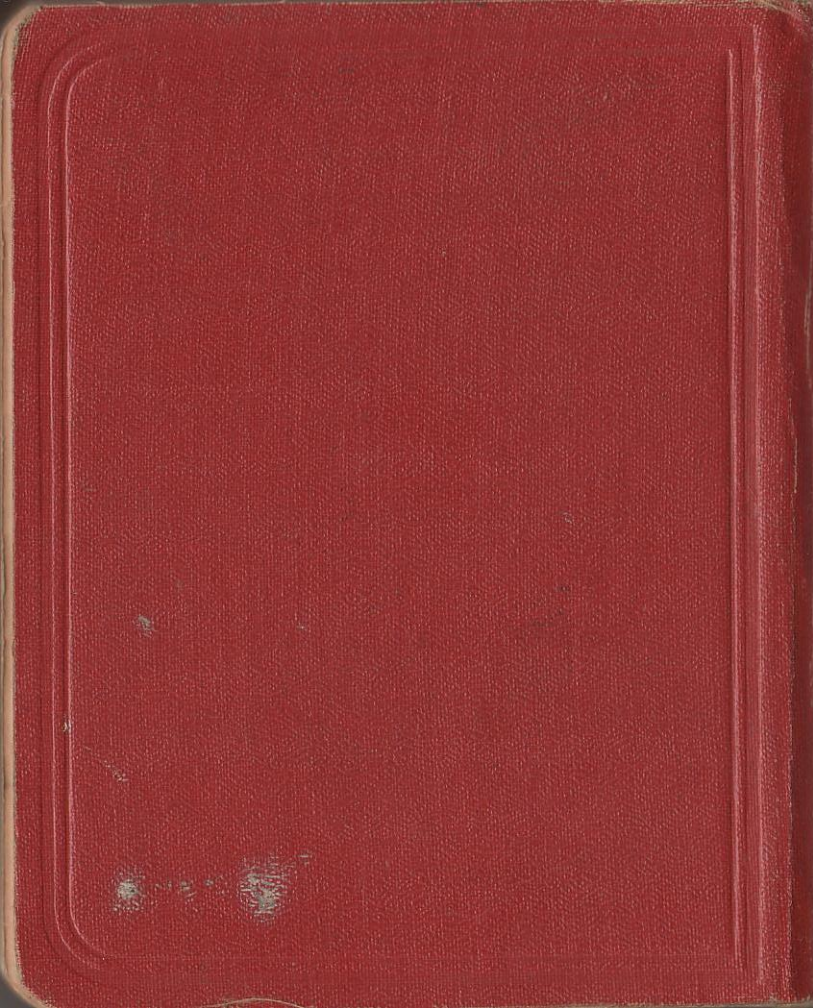
AIR SERVICE.

The War in the Air. By Walter Raleigh. Being the Story of the part played in the Great War by the Royal Air Force.

Vol. I. With 8 maps and a facsimile. 21s. net.

(Oxford University Press, Amen Corner.)

Printed under the authority of HIS MAJESTY'S STATIONERY OFFICE
by William Clowes and Sons, Ltd., London and Beccles.





This manual has been scanned by the
Vickers MG Collection & Research Association

www.vickersmg.org.uk

Please support the work of the Association.

Click on the image to donate through PayPal:



Or regularly support us through Patreon:

